Note remarks

Test sheet : IHC 7,6 m 2 Edition : 01.02.90 : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 846 570

Injection pump

Pump designation : PES6A95D32ORS2770 EP type number : 0 410 896 905

Governor

: RQV350...1350AB1236-Governor design.

2R

: 0 420 213 111 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-360

: 134.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Openina

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 13501st speed

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 13501st speed

7.30...7.50 travel mm

: 1460 2nd speed rom travel mm

: 8.10...8.50 : 550 3rd speed rpm

: 3.10...3.50 travel mm

rpm : 350 4th speed

: 1.30...1.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1535 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350Aneroid pressure h: 700

Del.quantity

7 : 73.5...75.5 1000 : (71.5...77.5)

cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 46...54

Testing:

1st rack travel in: 10.10

rpm : 1405...1435 Speed

2nd rack travel in: 4.00

Speed rpm: 1515...1525 4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testina:

Speed : 100 rpm

Minimum rack trave: 9.00

: 350 Speed rpm

Rack travel in mm : 5.80...6.00

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 700 Pressure

: 11.10...11.20 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nd pressure hPa : 170

Rack travel in m: 9.00...9.10

3rd pressure hPa : 300 Rack travel in m: 10.10...10.50

START CUT-OUT

Speed 1/min: 280 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 55.0...59.0

1000 s: (53.0...61.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1405...1435 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/: 17.0...21.0

1000 s: (14.5...23.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm 835093

before stop.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet : IHC 7,6 W : 01.02.90 Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 846 572

Injection pump

Pump designation : PES6A95D32ORS2779 EP type number : 0 410 896 903

Governor

: RQV350...1350AB1236-Governor design.

5R

: 0 420 213 115 Governer no.

Customer-spec. information : NAVISTAR Customer

: DTA 360 Engine

: 138.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Openina

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 1350 1st speed

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

: 7.30...7.50 travel mm

2nd speed : 1460 rpm

: 8.10...8.50 travel mm

3rd speed rpm

: 550 : 3.10...3.70 : 350 travel mm

4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

: 85.5...87.5 Del.quantity

1000 : (83.5...89.5) : 3.50

cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.50

Speed rpm : 1400...1430 2nd rack travel in: 4.00

rpm : 1530...1540 Speed

4th rack travel in: 1625

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed : 100 rpm Minimum rack trave: 9.00 rpm : 350 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

: 12.40...12.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 240

Rack travel in m: 10.60...10.70

3rd pressure hPa : 425

Rack travel in m: 11.70...12.10

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 68.5...72.5 1000 s: (66.5...74.5)

**BREAKAWAY** 

A04

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1400...1430 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 17.0...21.0 1000 s: (15.0...23.0) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #1815226091

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: IHC 7,6 w 1 : 01.02.90 Test sheet Edition : 28.9.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 573

Injection pump

Pump designation : PES6A95D32ORS2779 EP type number : 0 410 896 903

Governor

Governor design. : RQV350...1350AB1236-

6R

: 0 420 213 116 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT 360 Engine

: 127.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

**Opening** 

pressure, bar : 250...253

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 13501st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.3...8.5

100 s: (8.1...8.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 13501st speed

: 7.30...7.50 travel mm rpm : 1460 2nd speed

: 8.10...8.50 travel mm

: 550 3rd speed rpm

: 3.10...3.70 travel mm

: 350 4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

Anerou F. Del.quantity 1000

: 83.5...85.5 : (81.5...87.5)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testina:

1st rack travel in: 11.30

rpm : 1390...1420 Speed

2nd rack travel in: 4.00

Speed rpm : 1525...1535 4th rack travel in: 1625

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 11...19

Testing:

Speed : 100 rpm Minimum rack trave: 9.00 : 350 Speed rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 900

Rack travel mm : 12.30...12.40

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 185

Rack travel in m: 10.30...10.40

3rd pressure hPa : 325 Rack travel in m: 11.40...11.80

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 67.0...71.0

1000 s: (65.0...73.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 17.0...21.0

1000 s: (15.0...23.0)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1815265C91

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark is at start of delivery of cylinder 1

Note remarks

Test sheet : IHC 7,6 w 2 : 06.03.90 Edition Replaces : 28.9.89 Test oil : ISO-4113

: 0 400 846 574 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2779 : 0 410 896 903 EP type number

Governor

: RQV350...1300AB1236-Governor design.

4R

: 0 420 213 117 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT 466 Engine

: 138.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Openina

: 250...253 pressure, bar

Orifice plate

: 0,5 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.3) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed : 7.30...7.50 travel mm

rpm : 1460

2nd speed

: 8.10...8.50 travel mm

3rd speed 550 rpm

: 3.10...3.70 : 350 travel mm

4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 900

: 92.5...94.5 Del.quantity 1000 : (90.5...96.5)

Spread cm3: 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 12.00

rpm : 1355...1385 Speed

2nd rack travel in: 4.00

rpm : 1505...1515 Speed

4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testina:

rpm : 100 Speed Minimum rack trave: 9.00 : 350 Speed rom

Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 900 Pressure

: 13.00...13.10 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90 2nd pressure hPa : 175 Rack travel in m: 12.00...12.10

3rd pressure hPa : 340

Rack travel in m: 12.40...12.80

START CUT-OUT

1/min : 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500

Del.quantity cm3/: 89.5...93.5

1000 s: (87.5...95.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

rpm : 1355...1385 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 16.20...17.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 17.0...21.0 1000 s: (15.0...23.0) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #1815266C91

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet : RAB 9,7 b 2

: 09.11.89 Edition

Replaces

Test oil : ISO-4113

: 0 400 846 576 Combination no.

Injection pump

Pump designation : PES6A95D420LS2595

EP type number : 0 410 896 930

Governor

Governor design. : RQ200/1050AB1246

: 0 420 201 647 Governer no.

Customer-spec. information Customer : RABA

: D2156 MT6U Engine

: 154.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.05)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.40...12.50

Del.guantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 200.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 500

Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050Aneroid pressure h: 700

: 124.5...126.5 Del.quantity : (122.5...128.5) 1000

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 500 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.40

rpm : 1095...1110 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1225

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200 Rack travel in mm : 6.5

Testina:

Speed rpm : 100 Minimum rack trave: 8.00 rpm : 200

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

Speed rpm : 280...320

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.40...12.50

rpm : 500 2nd speed

Rack travel in m: 13.20...13.30 d speed rpm : 735

3rd speed

Rack travel in m: 13.00...13.10

4th speed rpm : 840

Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 700 Pressure

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80 2nd pressure hPa : 220 Rack travel in m: 12.40...12.50 3rd pressure hPa : 150

Rack travel in m: 11.10...11.30

START CUT-OUT

1/min: 140 (160) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 600 Speed

Del.quantity cm3/: 120.5...123.5 1000 s: (118.0...126.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 79.0...81.0 1000 s: (77.0...83.0)

RACK STOP ADJUSTMENT

rom : 500Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 156.0...166.0 1000 s: (153.0...169.0)

Rack travel in mm : 17.50...17.70

Remarks:

: IKARUS

Set idle stop at 200 min -1 to a

control-rod travel of 6.4 mm

**APPLICATION** 

Omnibus

Note remarks

: KHD 6,1 h 1 : 24.11.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 400 846 577 Combination no.

Injection pump

Pump designation : PES6A85D41DRS2591 EP type number : 0 410 886 903

Governor

Governor design. : RQ300/1325AB1247L

: 0 420 200 114 Governer no.

Customer-spec. information

: KHD Customer

Engine : BF6L913

1st version kW : 124.0 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1325 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 8.6...3.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.4)

rpm : 300.0 2nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.0...1.6 100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 1325

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1325 Speed Aneroid pressure h: 700

Aneroid p. Del.quantity 1000 : 86.5...87.5

: (84.5...89.5) : 3.00 cm3

Spread 1000 : (4.50)

RATED SPEED

1st version

Setting point:

: 1325 Speed rpm

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60 Speed rpm : 1370...1385

2nd rack travel in: 4.00

: 1450...1480 Speed rpm

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300

Rack travel in mm: 6.0

Testina:

rpm : 200 Speed Minimum rack trave: 6.40 rpm : 300 Speed

Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 505...545

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 1325

Rack travel in m: 12.60...12.70

3rd speed rpm : 815
Rack travel in m: 13.70...13.90
4th speed rpm : 1070

Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : -

: 11.60...11.80 Rack travel mm

Measurement

1/min: 800 Speed

1st pressure hPa : 700

Rack travel in m: 13.00...13.20

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 800

Del.quantity cm3/: 83.0...85.0 1000 s: (80.5...87.5)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 55.0...56.0 1000 s: (53.0...58.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1370...1385 Speed

STARTING FUEL DELIVERY

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 15,0 c1 Test sheet Edition : 30.03.90 : 27.10.89 Replaces Test oil : ISO-4113 Combination no. : 0 400 858 006 Injection pump Pump designation : PES8A95D412LS2334 : 0 410 898 998 EP type number Governor Governor design. : RQ250/1100AB793DL : 0 420 202 238 Governer no. Customer-spec. information Customer : MAN : D2858M4 Engine : 304.0 : 2200 1st version kW Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 1 681 343 009 assembly Openina . : 172...175 pressure, bar Test Lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 1.70...1.80 Prestroke mm : (1.65...1.75) Rack travel in mm : 9.00...12.00

: 1- 2- 7- 8- 4- 5-6- 3 Firing order : 0-45-90-135-180-225-Phasina 270-315 Tolerance + - ° : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 11.5...11.7 100 s: (11.3...11.9) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 700 Rack travel in mm : 15.60...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed 115.5...117.5 Del.quantity 1000 : (113.5...119.5) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Setting point: : 700 Speed Rack travel in mm: 16.0 Testing: 1st rack travel in: 10.10 rpm : 1145...1160 Speed

2nd rack travel in: 4.00

Speed

rpm : 1195...1225

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 250 Rack travel in mm: 6.0

Testing:

Speed : 100 rpm Minimum rack trave: 7.50 : 250 Speed rpm

Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 370...410

TORQUE CONTROL

Dimension a mm : 0.15

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.10...11.20 2nd speed rpm : 500 Rack travel in m: 11.40...11.50 3rd speed rpm : 1135

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : <121.0

1000 s: (<123.5)

Speed rpm : 800

Del.quantity cm3/: 116.5...119.5 1000 s: (114.0...122.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1145...1160 Speed

Remarks:

: MAN-NR. 1-7545

Note remarks

: MWM 3,1 b 2 : 30.03.90 Test sheet Edition : 10.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 863 008

Injection pump

Pump designation : PES3A90D320/3RS2658

: 0 410 893 004 EP type number

Governor

Governor design. : RSV325...1500A2C505-

3R

: 0 420 233 229 Governer no.

Customer-spec. information : MWM Customer

: D226B-3 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm: 9.00...12.00 Firing order: 1- 2- 3

Firing order

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 8.9...9.0

100 s: (8.7...9.2)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 9.7...9.9

Del.quantity cm3/: 4.6...5.2

100 s: (4.4...5.4)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 89.5...90.5 Del.quantity 1000 : (87.5...92.5)

: 3.00 cm3

1000 : (5.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1180...1210 Speed 3rd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1375 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 9.3 Speed rpm: 325
Rack travel in mm: 9.70...9.90
Rack travel in mm: 2.00 rpm : 480...540 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.20...11.30 2nd speed rpm : 500 Rack travel in m: 11.20...11.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 115.0 1000 s: (112.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

: KHD 3,0 f Test sheet : 06.04.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 863 016

Injection pump

Pump designation : PES3A85D410/3RS2780

EP type number : 0 410 883 987

Governor

: RSV325...1250A2C2239 Governor design.

-1L

: 0 420 232 533 Governer no.

Customer-spec. information Customer : KHD

: F3L942 F Engine

1st version kW : 40.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina |

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 2

: 0-120-240 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 8.1...8.3 Del.quantity cm3/: 1.0...1.6 100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 64.0...65.0 Del.quantity

1000 : (62.0...67.0)

: 3.00 Spread cm3

1000

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00

rpm : 1345...1375 Speed 3rd rack travel in: 4.00 rpm : 1355...1385 Speed 4th rack travel in: 1530 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring : 325 Speed rpm Rack travel in mm: 5.5 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm: 325
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00 Speed rpm : 420...450 TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1250
Rack travel in m: 11.40...-11.50 1st speed nd speed rpm : 500 Rack travel in m: 11.60...11.70 2nd speed 3rd speed rpm : 840 Rack travel in m: 11.50...11.60 FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5)

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1290...1300

### STARTING FUEL DELIVERY

Remarks:

A18

Note remarks

Test sheet : KHD 3,0 f 1 : 02.05.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 863 017

Injection pump

: PES3A85D410/3RS2780 Pump designation

: 0 410 883 987 EP type number

Governor

: RSV325...900A4C2239-Governor design.

: 0 420 232 538 Governer no.

Customer-spec. information Customer : KHD

: F3L912F Engine

: 25.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 2

Phasina : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 710 1st speed

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 5.6...5.7

100 s: (5.4...5.9)

cm3 : 0.2Spread

100 s: (-)

2nd speed rpm : 325.0 Rack travel in mm : 8.1...8.3

Del.guantity cm3/: 1.1...1.7

100 s: (0.9...1.9)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 710

: 56.5...57.5 Del.quantity 1000 : (54.5...59.5)

: 2.50 Spread cm3

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.70

rpm : 748...753 Speed

2nd rack travel in: 4.00

rpm : 789...804 Speed

4th rack travel in: 940

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm: 325 Rack travel in mm: 6.0

Testing:

Speed : 100 rpm Minimum rack trave: 19.50 : 325

rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

rpm : 320...380 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 752 rpm

Del.quantity cm3/: 48.0...50.0

1000 s: (45.5...52.5)

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

:

Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : KHD 1 g 3 : 15.12.89 Test sheet Edition : 2.2.88 Replaces : ISO-4113 Test oil : 0 400 864 054 Combination no. Injection pump Pump designation: PES4A85D410/3RS2638 EP type number : 0 410 884 950 Governor Governor design. : RSV325...1150A0C2168 : 0 420 232 364 Governer no. Customer-spec. information Customer : KHD : BF4L913 Engine 1st version kW : 66.0 Rated speed : 2300 2nd version kW : 60.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175

Phasina : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1110 1st speed Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 8.0...8.1 100 s: (7.8...8.3) cm3 : 0.3Spread 100 s: (0.4) 2nd speed rpm : 325.0Rack travel in mm: 8.1...8.3 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7) cm3 : 0.2 Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1110 Del.quantity : 80.0...81.0 1000 Test lines : 1 680 750 014 : (78.0...83.0) : 3.00 Spread cm3 : (4.50) 1000 Outside diameter x Wall thickness 2nd version : 6.00x2.00x600 rpm : 1150 x Lenath mm Speed Del.quantity cm3/: 74.5...75.5 1000 s: (72.5...77.5) (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. cm3 : 3.00 Spread 1000 s: (4.50) per values RATED SPEED BEGINNING OF DELIVERY 1st version

: 2.50...2.60 : (2.45...2.65)

: 1-3-4-2

Test pressure, bar: 25...27

Control lever position degrees: 49...57 Testing: 1st rack travel in: 11.30 Speed rpm: 1155...1165 2nd rack travel in: 4.00 Speed rpm : 1250...1280 3rd rack travel in: 4.00 rpm : 1320...1350 Speed 4th rack travel in: 1430 rpm : 0.30...1.40Speed 2nd version Control lever position degrees: 52...60 Testing: 1st rack travel in: 9.60 rpm : 1220...1230 Speed 2nd rack travel in: 4.00 Speed rpm: 1325...1355 4th rack travel in: 1475 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 26...34 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 7.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 7.60...7.80 Rack travel in mm: 2.00 Speed : 530...580 rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1110 Rack travel in m: 12.30...12.40 2nd speed rpm : 500 Rack travel in m: 13.10...13.20 : 940 4th speed rpm Rack travel in m: 12.70...12.90 Torque control curve - 2nd version 1st speed rpm : 1150 Rack travel in m: 10.5...10.6 2nd speed rpm : 500 Rack travel in m: 11.2...11.3
3rd speed rpm : 900 Rack travel in m: 10.9...11.2

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm: 700 Del.quantity cm3/: 79.5...81.5 1000 s: (77.0...84.0) 2nd version rpm : 800 Speed Del.quantity cm3/: 65.5...68.5 1000 s: (63.5...70.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1155...1165 Speed 2nd version 1mm rack travel less than full load rack tr: 9.50 rpm : 1220...1230 STARTING FUEL DELIVERY rpm : 100 Speed Remarks: **APPLICATION** 

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) Rack travel in mm : 16.80...17.20

> : S29=DX 92=DX4.70 (1) : S28=DX 86=DX4.50 (2)

Tractor (tractor engines)

Note remarks

: MWM 4,1 b 1 Test sheet Edition : 05.08.88 : 1.86 Replaces Test oil : ISO-4113

: 0 400 864 057 Combination no.

Injection pump

Pump designation : PES4A90D320/3RS2659

EP type number : 0 410 894 028

Governor

Governor design. : RSV325...1500A2C505-

2R

: 0 420 233 196 Governer no.

Customer-spec. information Customer : MWM

: D226B-4 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 8.9...9.0

100 s: (8.7...9.2)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.02nd speed

Rack travel in mm: 7.0...7.2 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1500 Speed rpm

: 89.5...90.5 Del.quantity 1000 : (87.5...92.5)

: 3.00 cm3 Spread

: (5.00) 1000

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.50

rpm : 1540...1550 Speed

2nd rack travel in: 4.00

rpm : 1590...1620 Speed

3rd rack travel in: 4.00

rpm : 1615...1645 Speed

4th rack travel in: 1780

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 20...28

Setting point w/out bumper spring Speed rpm : 325

Rack travel in mm: 6.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 325 Rack travel in mm : 7.00...7.20

Rack travel in mm : 2.00

Speed rpm : 465...525

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1540...1550 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 131.0...141.0

1000 s: (128.0...144.0)

Rack travel in mm : 19.50...21.00

Remarks:

Note remarks

Test sheet : KHD 1 g 43 : 04.05.90 Edition : 7.4.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 864 074

Injection pump

Pump designation : PES4A85D410/3RS2638

: 0 410 884 950 EP type number

Governor

: RSV325..1150A0C2168-Governor design.

4L

: 0 420 232 524 Governer no.

Customer—spec. information Customer : KHD

: BF4L913T Engine

: 60.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 7.1...7.2

100 s: (6.9...7.4)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 8.8...9.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.4...2.4)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 71.5...72.5 Del.quantity 1000 : (69.5...74.5)

: 3.00 cm3 Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 10.40

Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1270...1300 Speed

3rd rack travel in: 4.00

rpm : 1330...1360 Speed 4th rack travel in: 1500 rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 76...84

Setting point w/out bumper spring

: 325 rpm Rack travel in mm: 8.4

Testina:

: 100 Speed rpm Minimum rack trave: 19.50 : 325 rpm

Rack travel in mm : 8.80...9.00

Rack travel in mm : 2.00 : 720...780 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 11.40...11.50

2nd speed

nd speed rpm : 500 Rack travel in m: 12.50...12.60

3rd speed rpm : 940

Rack travel in m: 11.90...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 800 Speed

Del.guantity cm3/: 71.5...73.5

1000 s: (69.0...76.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 Speed . rpm

Del.quantity cm3/: 130.0...140.0

1000 s: (127.0...143.0)

Rack travel in mm : 19.50...21.00

Remarks:

: DX 3 X

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : KHD 4,1 i Edition : 06.04.90

Replaces

Test oil : ISO-4113

Combination no. : 0 400 864 075

Injection pump

Pump designation : PES4A85D410/3RS2781

EP type number : 0 410 884 945

Governor

: RSV325...1250A2C2239 Governor design.

-1L

: 0 420 232 533 Governer no.

Customer—spec. information Customer : KHD

: F4L912F Engine

: 54.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1- 3- 4- 2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.02nd speed Rack travel in mm: 8.1...8.3 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 64.0...65.0 Del.quantity 1000 : (62.0...67.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.40 Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1345...1375

3rd rack travel in: 4.00

Speed rpm : 1355...1385 4th rack travel in: 1530 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring : 325 rom Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 11.40...11.50 rpm : 500 2nd speed Rack travel in m: 11.60...11.70 3rd speed rpm : 840 Rack travel in m: 11.50...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm: 750 Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1290...1300 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm: 19.50...21.00 Remarks:

Note remarks

Test sheet : MWM 4,1 b 2 Edition : 13.12.89

Replaces

: ISO-4113 Test oil

: 0 400 864 076 Combination no.

Injection pump

Pump designation : PES4A90D320/3RS2659

EP type number : 0 410 894 028

Governor

: RSV325...1250A0c2182 Governor design.

-7R

: 0 420 233 258 Governer no.

Customer-spec. information Customer : MWM

: TD224/04 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05

: (2.90...3.10) Rack travel in mm : 9.00...12.00

Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00 & maximum rack tra: 21.00

Difference ° CS : 3.50...4.50

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 9.1...9.2

100 s: (8.9...9.4)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.0...7.2

Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 700

: 91.5...92.5 Del.quantity

1000 : (89.5...94.5) : 3.00

cm3 Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.50

rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1325...1355 Speed 3rd rack travel in: 4.00 rpm : 1340...1370 Speed 4th rack travel in: 1505 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 5.5 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 470...530 TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 11.50...11.60 and speed rpm : 500 Rack travel in m: 12.60...12.70 2nd speed 3rd speed rpm : 890 Rack travel in m: 11.90...12.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Pressure : 12.60...12.70 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 185 Rack travel in m: 11.60...11.70 3rd pressure hPa : 90 Rack travel in m: 11.00...11.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 800 Speed Del.quantity cm3/: 101.0...103.0 1000 s: (98.5...105.5)

### **BREAKAWAY**

1st version 1mm rack travel less than full load rack tr: 10.50 Speed rpm : 1290...1300

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 4,1 j Edition : 05.03.90 Replaces : ISO-4113 Test oil Combination no. : 0 400 864 077 Injection pump : PES4A95D410/3RS2789 Pump designation : 0 410 894 995 EP type number Governor Governor design. : RSV325...1150A5C2244 Governer no. : 0 420 232 536 Customer-spec. information Customer : F4L913 Engine 1st version kW : 68.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter

x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order

: 0-90-180-270 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 9.0...9.2

100 s: (8.8...9.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm : 8.3...8.5 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

-cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 90.0...92.0 Del.quantity 1000 : (88.0...94.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...53

Testing:

1st rack travel in: 11.80 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1240...1250 Speed

3rd rack travel in: 4.00

Speed rpm : 1250...1280 4th rack travel in: 1415 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring : 325 Speed rpm Rack travel in mm: 5.5 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 400...460 Speed rpm TORQUE CONTROL Torque control curve - 1st version : 1150 1st speed rpm Rack travel in m: 12.80...12.90 rpm : 500 2nd speed Rack travel in m: 13.20...13.30 4th speed rpm : 1070 Rack travel in m: 13.00...13.20 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 88.5...91.5

1000 s: (86.0...94.0)

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.80 rbm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 120.0...13.0 1000 s: (117.0...16.0) Rack travel in mm : 19.50...21.00

Remarks:

: TM 2

#### APPLICATION

Tractor (tractor engines)

Note remarks

: KHD 4,1 i 1 Test sheet : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

: 0 400 864 078 Combination no.

Injection pump

Pump designation : PES4A85D410/3RS2781

: 0 410 884 945 EP type number

Governor

: RSV325...900A4C2239-Governor design.

: 0 420 232 538 Governer no.

Customer-spec. information : KHD Customer

: F4L912F Engine

1st version kW : 34.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 710

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 5.6...5.7

100 s: (5.4...5.9)

cm3 : 0.2Spread

rpm : 325.0 2nd speed Rack travel in mm : 8.1...8.3 Del.quantity cm3/: 1.1...1.7 100 s: (0.9...1.9)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 710 Speed

: 56.5...57.5 1000 : (54.5...59.5) Del.quantity

: 2.50 Spread cm3

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 10.70 rpm : 748...753 Speed 2nd rack travel in: 4.00

rbm : 789...804 Speed

4th rack travel in: 940

: 0.30...1.40 Speed rpm

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm: 325 Rack travel in mm: 6.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 : 325 Speed rpm

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

rpm : 320...380 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 752 Speed

Del.quantity cm3/: 48.0...50.0 1000 s: (45.5...52.5)

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 19.50...21.00

Remarks:

**APPLICATION** 

Generator set

Note remarks

Test sheet : KHD 5,1 d 2 : 02.01.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 865 025

Injection pump

: PES5A80D410/3RS2526 Pump designation

: 0 410 885 999 EF type number

Governor

: RSV325...1250A5c2239 Governor design.

: 0 420 232 526 Governer no.

Customer-spec. information Customer : KHD

: F5L912 Engine

: 68.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1- 3- 5- 4- 2 Firing order

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.80...11.90

Del.guantity cm3/: 6.9...7.0

100 s: (6.8...7.2)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.5)

Spread cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed : 1250 mar

: 69.5...70.5 Del.quantity 1000 : (68.0...72.0)

: 3.00 cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.80 Speed rpm : 1290...1300

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

3rd rack travel in: 4.00

Speed rpm : 1345...1375 4th rack travel in: 1510 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring : 325 rpm Rack travel in mm: 5.5 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 400...460 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 11.80...11.90 2nd speed rpm : 750 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 54.5...56.5 1000 s: (52.5...58.5) rpm : 100 Speed Del.quantity cm3/: 63.0...65.0 1000 s: (61.0...67.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 105.0...115.0 1000 s: (102.0...118.0) LOW IDLE Speed rpm: 325
Rack travel in mm: 7.40...7.60
Del.quantity cm3/: 8.0...14.0

1000 s: (6.5...15.5)

Spread cm3 : 2.50 1000 s: (4.50)

Remarks:

Note remarks

Test sheet Edition

Replaces

: KHD 5,1 i : 01.02.90

Test oil

: ISO-4113

Combination no.

: 0 400 865 025

Injection pump

Pump designation : PES5A80D410/3RS2782

EP type number

: 0 410 885 999

Governor

Governor design.

: RSV325...1250A5C2239

Governer no.

: 0 420 232 526

Customer-spec. information

Customer

: KHD

Engine

: F5I 912

1st version kW

: 68.0

Rated speed

: 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order

: 1-3-5-4-2

Phasing

: 0-72-144-216-288

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1250

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 6.9...7.0

100 s: (6.8...7.2)

Spread

cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.5)

Spread

cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1250

: 69.5...70.5 Del.quantity

1000 : (68.0...72.0) : 3.00 cm3

Spread

1000 : (5.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...58

Testing:

1st rack travel in: 10.80

Speed

rpm : 1290...1300

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

3rd rack travel in: 4.00

Speed rpm : 1345...1375 4th rack travel in: 1510 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 325 Speed Rack travel in mm: 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 400...460 TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 11.80...11.90 2nd speed rpm : 750 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/ : 54.5...56.5 1000 s: (52.5...58.5) rpm : 1000 Speed Del.quantity cm3/: 63.0...65.0 1000 s: (61.0...67.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1290...1300 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 105.0...115.0 1000 s: (102.0...118.0) LOW IDLE

Speed rpm : 325 Rack travel in mm : 7.40...7.60 Del.quantity cm3/: 8.0...14.0 1000 s: (6.5...15.5)

cm3 : 2.50Spread 1000 s: (4.50) Remarks:

Note remarks

: FOR 5,9 d 1 Test sheet : 06.04.90 Edition

Replaces

: ISO-4113 Test oil

: 0 400 866 104E Combination no.

Injection pump

Pump designation : PES6A90D210RS2628 : 0 410 896 074 EP type number

Governor

: RSV325...1200A0C2140 Governor design.

: 0 420 232 372 Governer no.

Customer-spec. information : FORD/GB Customer

: DOVER Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 7.8...7.9

100 s: (7.6...8.1)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 0.5...1.1

100 s: (0.3...1.3)

cm3 : 0.2 100 s: (0.4) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed Aneroid pressure h: 700

: 78.5...79.5 Del.quantity 1000 : (76.5...81.5)

: 3.00 cm3

Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testina:

1st rack travel in: 10.10

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1360...1390 Speed

3rd rack travel in: 4.00

rpm : 1365...1395 Speed

4th rack travel in: 1540

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 85...93 Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 4.8

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 rpm : 350 Speed

Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 : 490...550 Speed rom : 625 Speed rom Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1175

Rack travel in m: 11.10...11.20

2nd speed rpm : 500

Rack travel in m: 11.10...11.30

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rom Pressure hPa : 700

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10 2nd pressure hPa : 500 Rack travel in m: 10.70...10.80

3rd pressure hPa : 380

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 44.0...46.0
1000 s: (42.0...48.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm: 100 Del.quantity cm3/: 76.0...90.0 1000 s: (73.0...93.0) Rack travel in mm : 19.50...21.00

Remarks:

At start of delivery, locating pin must latch into slit in pointer.

Test electrically-released starting quantity (EES) with 12 volts

Note remarks

Test sheet : CUM 8,3 k 2 Edition : 06.03.90 : 15.6.88 Replaces : ISO-4113 Test oil

: 0 400 866 124 Combination no.

Injection pump

: PES6A100D320/3RS2691 Pump designation

: 9 410 230 025 EP type number Governor

Governor design. : RSV400...1250A0C2216

-2R

: 0 420 233 217 Governer no.

Customer-spec. information : C.D.C. Customer

: 6 CT 830 Engine

1st version kW : 160.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50 Firing order : 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 121.0...123.0 Del.quantity 1000 : (119.0...125.0)

> : 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 58...66

Testina:

1st rack travel in: 11.00

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1395...1425 Speed

3rd rack travel in: 4.00

rpm : 1400...1430 Speed

4th rack travel in: 1500

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 33...41

Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1250
Rack travel in m: 12.00...12.10

rpm : 750 2nd speed

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 rpm Speed

Del.quantity cm3/: 122.0...126.0

1000 s: (120.0...128.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: C.D.C. # 3915982

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : KHD 6,1 r : 03.11.89 Edition : 28.11.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 866 125

Injection pump

Pump designation : PES6A85D410/3RS2761

: 0 410 886 895 EP type number

Governor

: RSV325...1150A8C674-Governor design.

1L

: 0 420 232 518 Governer no.

Customer—spec. information Customer : KHD

Engine : BF6L913

: 112.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1150 Aneroid pressure h: 700

: 84.5...85.5 Del.quantity

1000 : (82.5...87.5)

: 3.00 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00 Speed rpm : 1245...1275 4th rack travel in: 1410 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 7.1 Testing: Speed : 100 rom Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 7.50...7.70 Rack travel in mm: 2.00 : 420...480 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 12.10...12.20 rpm : 750 2nd speed Rack travel in m: 12.60...12.70 d speed rpm : 855 3rd speed Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mar hPa : -Pressure Rack travel mm : 11.50...11.60 Measurement 1/min: 500 Speed 1st pressure hPa : 350 Rack travel in m: 11.90...12.00 3rd pressure hPa : 700 Rack travel in m: 12.60...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 750 Speed rpm Del.quantity cm3/: 87.0...89.0 i000 s: (84.5...91.5) Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 64.5...65.5 1000 s: (62.5...67.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.10

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

**B16** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : KHD 6,1 r 1 : 03.11.89 Test sheet Edition : 28.11.88 Replaces : ISO-4113 Test oil Combination no. : 0 400 866 126 Injection pump Pump designation : PES6A85D410/3RS2761 : 0 410 886 895 EP type number Governor : RSV325...1150A8C673-Governor design. 21 : 0 420 232 519 Governer no. Customer-spec. information : KHD Customer : BF6I 913 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

1st version kW Rated speed

: 1 417 413 000

: 112.0 : 2300

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.10...12.20

Del.guantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 7.5...7.7
Del.quantity cm3/: 0.9...1.5
100 s: (0.7...1.7)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 84.5...85.5 Del.quantity 1000 : (82.5...87.5)

: 3.00 cm3Spread

: (5.00) 1000

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

3rd rack travel in: 4.00

Speed rpm : 1245...1275 4th rack travel in: 1410 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring : 325 Speed rpm Rack travel in mm: 7.1 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 7.50...7.70 Rack travel in mm : 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 12.10...12.20 2nd speed rpm : 750 Rack travel in m: 12.60...12.70 3rd speed rpm : 855 Rack travel in m: 12.30...12.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 110.0...120.0

1000 s: (107.0...123.0) Rack travel in mm : 17.00...17.40

Remarks:

: OHRENSTEIN & KOPPEL

Note remarks

: KHD 6,1 r 2 Test sheet : 03.11.89 Edition : 21.4.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 400 866 127

Injection pump

Pump designation : PES6A85D410/3RS2761

: 0 410 886 895 EP type number

Governor

: RSV325...1150A8C707-Governor design.

: 0 420 232 517 Governer no.

Customer—spec. information

: KHD Customer

Engine : BF6L913

1st version kW : 112.0 : 2300 Rated seed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7) Spread cm3: 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 700

: 84.5...85.5 Del.quantity

1000 : (82.5...87.5) : 3.00 cm3

Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

3rd rack travel in: 4.00 Speed rpm : 1245...1275 4th rack travel in: 1410 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 7.1 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 325 Speed rpm Rack travel in mm : 7.50...7.70 Rack travel in mm : 2.00 rpm : 420...480 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 12.10...12.20 2nd speed rpm : 750 Rack travel in m: 12.60...12.70 : 855 rpm 3rd speed Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : -: 11.50...11.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 350 Rack travel in m: 11.90...12.00 3rd pressure hPa : 700 Rack travel in m: 12.60...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 750 Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 64.5...65.5 1000 s: (62.5...67.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

Note remarks

Test sheet Edition : CUM 8,3 L : 06.03.90 : 7.4.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 866 128

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV410...950A0C2190-Governor design.

26R

: 0 420 233 224 Governer no.

Customer-spec. information : C.D.C. Customer

Engine : 6 CT

: 138.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...3.00)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 410.0 2nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

: 84.5...86.5 Del.quantity 1000 : (82.5...88.5)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

B21

1st rack travel in: 8.60

rpm : 1010...1020 Speed

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

3rd rack travel in: 4.00

Speed rpm : 1055...1085 4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 24...32

Setting point w/out bumper spring

: 410 rpm Rack travel in mm: 4.6

Testina:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 410 Speed

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

rpm : 950 1st speed

Rack travel in m: 9.60...9.70

rpm : 650 2nd speed

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rom

Del.quantity cm3/: 99.0...103.0 1000 s: (97.0...105.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.60

rpm : 1010...1020 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 410

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread

cm3 : 3.50 1000 s: (5.50)

Remarks:

: C.D.C. # 3915983

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

: CUM 8,3 L 9 Test sheet Edition : 06.03.90 Replaces : 28.9.89 Test oil : ISO-4113

Combination no. : 0 400 866 129

Injection pump

Pump designation : PES6A100b320/3RS2763

: 0 410 806 006 EP type number

Governor

: RSV400...1100A0c2190 Governor design.

-27R

: 0 420 233 225 Governer no.

Customer—spec. information Customer : C.D.C.

: 6CT 8.3 Engine

1st version kW : 111.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.70...9.80

Del.guantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 400.0Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.8)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Dearee: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 85.0...87.0 Del.quantity 1000 : (83.0...89.0)

: 4.00

cm3 Spread 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 8.70 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1205...1235 Speed 3rd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 30...38 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.9 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.30...5.50 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 9.70...9.80 2nd speed rpm : 750 Rack travel in m: 10.80...11.00 FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/ : 94.0...98.0 1000 s: (92.0...100.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70 Speed rpm : 1145...1155

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 11.5...15.5 1000 s: (9.0...18.0) Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: C.D.C. # 3915973

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CUM 8,3 a73 Test sheet Edition : 01.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 132LB

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

Governor design. : RSV400...1100A0C2190

-33R

: 0 420 233 237 Governer no.

: 3917456 Cust. part no.

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3ltr Engine

: 174.5 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

: 1 680 750 014 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 126.5...128.5 : (124.5...130.5) Del.quantity 1000

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing: 1st rack travel in: 11.70 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 Speed rpm : 1205...1235 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.1 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.00...5.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 155.0...175.0 1000 s: (150.0...180.0) Rack travel in mm : 16.20...16.40 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 6.00 Spread 1000 s: (8.00) Remarks: : Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : KHD 1 o 2
Edition : 24.11.89
Replaces : 21.4.89
Test oil : ISO-4113

Combination no. : 0 400 866 136

Injection pump

Pump designation : PES6A85D410/3RS2761

EP type number : 0 410 886 895

Governor

Governor design. : RSV325...1400A2C661-

1L

Governer no. : 0 420 232 516

Customer—spec. information Customer : KHD

Engine : BF6L913

1st version kW : 112.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.0GX600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 8.2...8.3

100 s: (8.0...8.5)

Spread cm3:0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

ver position Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1200

Del.quantity : 82.5...83.5 1000 : (80.5...85.5)

cm3 : 3.00

1000 : (5.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.90

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1285...1315

3rd rack travel in: 4.00

Speed rpm : 1305...1335 4th rack travel in: 1470 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring : 325 rpm Rack travel in mm: 7.0 Testing: : 100 Speed rpm Minimum rack trave: 19.50 rpm Rack travel in mm : 7.40...7.60 Rack travel in mm : 2.00 : 440...500 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 11.90...12.00 rpm : 750 2nd speed Rack travel in m: 12.70...12.80 3rd speed rpm : 1020 Rack travel in m: 12.30...12.50 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 85.0...87.0 1000 s: (82.5...89.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1240...1250 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0) Rack travel in mm : 17.00...17.40

Remarks:

: ORENSTEIN & KOPPEL

APPLICATION

Excavator

Note remarks

Test sheet : KHD 6,1 r 3 Edition : 03.11.89 : 16.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 866 137

Injection pump

Pump designation : PES6A85D410/3RS2761

: 0 410 886 895 EP type number

Governor

: RSV325...1400A2C2205 Governor design.

-1L

: 0 420 232 520 Governer no.

Customer-spec. information Customer : KHD

: BF6L913 Engine

: 118.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.02nd speed Rack travel in mm : 7.3...7.5 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 700

: 87.5...88.5 1000 : (85.5...90.5) Del.quantity

: 3.00 cm3

Spread : (5.00) 1000

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.30 Speed rpm : 1290...1300

2nd rack travel in: 4.00

: 1345...1375 Speed rom

3rd rack travel in: 4.00 Speed rpm : 1360...1390 4th rack travel in: 1525 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.9 Testing: : 100 Speed rom Minimum rack trave: 19.50 Speed rpm : 325
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00 rpm : 435...495 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 12.30...12.40 rpm : 750 2nd speed Rack travel in m: 12.80...12.90 3rd speed rpm : 940 Rack travel in m: 12.50...12.70 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure Rack travel mm : 11.40...11.50 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: <u>11.60...11.70</u> 3rd pressure hPa : 700 Rack travel in m: 12.80...12.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed

rpm : 750 Del.quantity cm3/: 88.5...90.5 1000 s: (86.0...93.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 62.5...63.5 1000 s: (60.5...65.5) C02

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

APPLICATION

Wheel loader

Excavator

Note remarks

: CUM 5,9 v 2 Test sheet : 01.02.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 866 143

Injection pump

Pump designation : PES6A95D12ORS2773 : 0 410 896 904 EP type number

Governor

: RSV350...1250A0C2237 Governor design.

: 0 420 233 240 Governer no.

Customer-spec. information Customer : CUMMINS

: 6BT Engine

: 118.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.10...2.20 Prestroke mm : (2.05...2.25)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 8.6...8.8

100 s: (8.3...9.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 86.0...88.0 Del.quantity 1000 : (83.5...90.5)

: 3.50 cm3

Spread : (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 91...99

Testing:

1st rack travel in: 8.40

Speed rpm : 1290...1300

2nd rack travel in: 4.00 rpm : 1355...1385 Speed 3rd rack travel in: 4.00 rpm : 1370...1400 Speed 4th rack travel in: 1530 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm: 350
Rack travel in mm: 5.40...5.60
Rack travel in mm: 2.00 Speed rpm : 465...525 TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1250 Rack travel in m: 9.40...9.50 1st speed rpm : 500 2nd speed Rack travel in m: 9.40...9.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 69.5...72.5 1000 s: (67.5...74.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.40 rpm : 1290...1300 STARTING FUEL DELIVERY Speed rpm : 100Del.quantity cm3/: 107.0...117.0 1000 s: (104.0...120.0) Rack travel in mm : 14.10...14.50 LOW IDLE

rpm : 350

Rack travel in mm : 6.10...6.30 Del.quantity cm3/ : 10.0...16.0 1000 s: (7.5...18.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

Start-of-delivery mark 11.5° cam angle after start of delivery cyl. 1

C04

Speed

Note remarks

Test sheet : CUM 8,3 a68 : 01.02.90 Edition : 7.4.89 Replaces : ISO-4113 Test oil

: 0 400 866 145 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV4D0...1100A0C2190 Governor design.

-35R

: 0 420 233 242 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6 C 8.3 ltr.

: 112.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.30...11.40

Del.guantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 105.5...107.5 Del.quantity : (103.5...109.5) 1000

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 3rd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 23...31 Setting point w/out bumper spring : 400 rpm Rack travel in mm : 5.4 Testing: Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.30 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 6.00Spread 1000 s: (8.00) Remarks: : C.D.C. # 3915955 Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

Test sheet : CUM 8,3 L10 Edition : 06.03.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 866 148

Injection pump

Pump designation : PES6A100D320/3RS2763

: 0 410 806 006 EP type number

Governor

: RSV415..1175A0c2190-Governor design.

43R

: 0 420 233 249 Governer no.

Customer-spec. information Customer : C.D.C

: 6 CT Engine

1st version kW : 129.0 : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 10.40...10.50

Del.guantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 415.0 2nd speed Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.5...1.9 100 s: (1.3...2.1)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

: 96.0...98.0 Del.quantity (94.0...100.0) 1000

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testina:

1st rack travel in: 9.40

rpm : 1210...1220 Speed

2nd rack travel in: 4.00

rpm : 1270...1300 Speed

3rd rack travel in: 4.00

rpm : 1275...1305 Speed

4th rack travel in: 1350

rpm : 0.30...0.70Speed

LOW IDLE 1 Control lever

position degrees: 32...40

Setting point w/out bumper spring

rpm : 415 Rack travel in mm: 4.7

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 415 Speed mon

Rack travel in mm : 5.10...5.30

TORQUE CONTROL

Torque control curve - 1st version

rpm: 1175 1st speed

Rack travel in m: 10.40...10.50

rpm : 800 2nd speed

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 98.0...102.0 1000 s: (96.0...104.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.40

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 415 Speed

Rack travel in mm : 5.10...5.30 Del.quantity cm3/ : 15.0...19.0 1000 s: (13.0...21.0)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: C.D.C. # 3919459

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

: CUM 8,3 L12 Test sheet Edition : 02.05,90

Replaces

Test oil : ISO-4113

: 0 400 866 149 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV400...1000A0c2190 Governor design.

-44R

: 0 420 233 250 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CTA Engine

: 166.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.4...1.8

100 s: (1.2...2.0)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 132.5...134.5 Del.quantity

1000 : (130.5...136.5)

: 4.00 Spread cm3 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 11.90

rpm : 1050...1060 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

3rd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1200

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 4.6

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 rpm : 375

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1000 1st speed

Rack travel in m: 12.90...13.00

rpm : 750 2nd speed

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 141.5...145.5 1000 s: (139.5...147.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 14.0...18.0

1000 s: (12.0...20.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3915570

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Adjust stop Lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

: CUM 8,3 L 8 Test sheet : 02.05.90 Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 866 150

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV400...1100A0C2190 Governor design.

-45R

: 0 420 233 253 Governer no.

Customer—spec. information Customer : C.D.C.

: 6CT 8.3 Engine

: 134.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 375.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.3...2.7

100 s: (2.1...2.9)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 101.5...103.5 Del.quantity

1000 : (99.5...105.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90 rpm : 1140...1150 Speed 2nd rack travel in: 4.00

rpm : 1230...1240 Speed

3rd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1300 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 31...39

Setting point wout bumper spring

rpm : 375 Rack travel in man: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 375 Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.90...11.00 2nd speed rpm : 750

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 rpm Speed

Del.quantity cm3/: 114.5...118.5 1000 s: (112.5...120.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del\_quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 375 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 23.0...27.0

1000 s: (21.0...29.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CUM 8,3 o
Edition : 01.02.90
Replaces : 28.9.89
Test oil : ISO-4113

Combination no. : 0 400 866 151

Injection pump

Pump designation : PES6A100D320/3RS2691

-4

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100A0C2238

-R

Governer no. : 0 420 233 254

Customer—spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 151.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 450.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 900

Del.quantity : 118.5...120.5 1000 : (116.5...122.5)

cm3 : 4.00

1000 : (6.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 42...50

Testing: 1st rack travel in: 11.10 rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 5.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 450 rpm Rack travel in mm : 5.70...5.90 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.10...12.20 rpm : 750 2nd speed Rack travel in m: 13.10...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 900 Pressure : 13.10...13.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 385 Rack travel in m: 11.40...11.50 3rd pressure hPa : 560 Rack travel in m: 12.60...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 750 Speed Del.quantity cm3/: 133.0...137.0 1000 s: (131.0...139.0) Del.quantity cm3/: 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.70...5.90
Del.quantity cm3/: 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3915996 Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Speed

Aneroid pressure h: -

rpm

: 500

Note remarks

Test sheet Edition : KHD 6,1 u : 01.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 152

Injection pump

Pump designation : PES6A85D410/3RS2783

: 0 410 886 893 EP type number

Governor

: RSV325...1250A5C2239 Governor design.

: 0 420 232 526 Governer no.

Customer-spec. information Customer : KHD

Engine : F6L912F

: 82.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Lenath mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 6.9...7.0

100 s: (6.7...7.2)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 69.5...70.5 Del.quantity 1000 : (67.5...72.5)

: 3.00 cm3

Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 10.80

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

3rd rack travel in: 4.00

rpm : 1345...1375 Speed 4th rack travel in: 1510 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 65...73

Setting point w/out bumper spring rpm : 325

Rack travel in mm: 5.5

Testing: Speed

rpm : 100 Minimum rack trave: 19.50 : 325 rom

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

rpm : 400...460 Speed

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 11.80...11.90

2nd speed rpm : 750

Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 54.5...56.5 1000 s: (52.0...59.0)

: 1000

Speed rpm Del.quantity cm3/: 63.0...65.0 1000 s: (60.5...67.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 105.0...115.0 1000 s: (102.0...118.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm: 325 Rack travel in mm: 7.40...7.60 Del.quantity cm3/: 8.0...14.0 1000 s: (6.0...16.0) Spread cm3 : 2.501000 s: (4.50)

Remarks:

C16

Note remarks

Test sheet : CUM 8,3 p Edition : 01.02.90 : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 866 153

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV400...950A0C2238-Governor design.

1R

: 0 420 233 255 Governer no.

Customer-spec. information : C.D.C. Customer

: 6CT 8.3 Engine

: 145.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 3.2...3.6

100 s: (3.0...3.8)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Aneroid pressure h: 900

: 122.0...124.0 Del.quantity : (120.0...126.0)

1000

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing: 1st rack travel in: 11.40 rpm : 990...1000 Speed 3rd rack travel in: 4.00 Speed rpm : 1055...1085 4th rack travel in: 1150 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 6.5 Testina: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 6.90...7.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 mar Pressure hPa : 900 : 12.40...12.50 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.60...10.80 2nd pressure hPa : 220 Rack travel in m: 11.10...11.20 3rd pressure hPa : 340 Rack travel in m: 11.90...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0) **BREAKAWAY** 1st version

1mm rack travel less than

full load rack tr: 11.40 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 32.5...36.5 1000 s: (30.5...38.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: C.D.C. # 3917577

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

: CUM 8,3 L11 : 01.02.90 Test sheet Edition

Replaces Test oil

: ISO-4113

: 0 400 866 155 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2763

ER type number : 0 410 806 006

Governor

Governor design. : RSV400...1000A0C2190

-46R

: 0 420 233 257 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CT 8.3

: 136.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 10.7...10.9

100 s: (10.5...11.1)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.8)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Dearee: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 107.0...109.0 Del.quantity 1000 : (105.0...111.0)

cm3 : 4.00

: (6.50) 1000

RATED SPEED

Spread

1st version

Control Lever

position degrees: 39...47

Testing:

1st rack travel in: 11.20 rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1095...1125 3rd rack travel in: 4.00

rpm : 1100...1130 Speed

4th rack travel in: 1200

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.9

Testina:

: 100 Speed rpm Minimum rack trave: 19.00 : 400 man

Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11.20...11.30

rpm : 750 2nd speed

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rom

Del.quantity cm3/: 118.0...122.0

1000 s: (116.0...124.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 11.5...15.5 1000 s: (9.0...18.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: C.D.C. # 3916719

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : VMA 6,0 a : 02.01.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 156

Injection pump

Pump designation : PES6A90D320/3RS2785

EP type number : 0 410 896 088

Governor

: RSV350...1300A2c2242 Governor design.

: 0 420 233 259 Governer no.

Customer-spec. information

Customer : VM

Engine : SUN 6105 ...T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm: 12.00...12.10

Del.quantity cm3/: 9.4...9.5

100 s: (9.2...9.7)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm: 7.4...7.6

Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2 100 s: (0.4) Spread

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 94.5...95.5 : (92.5...97.5) Del.quantity

1000

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.00

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1385...1415 Speed

3rd rack travel in: 4.00

rpm : 1415...1445 Speed

4th rack travel in: 1580 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 64...72 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.0 Testina: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm: 350
Rack travel in mm: 7.40...7.60
Rack travel in mm: 2.00
Speed rpm: 530...590 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.00...12.10 rpm : 550 2nd speed Rack travel in m: 12.00...12.10 5th speed rpm : 400 Rack travel in m: 13.20...13.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 105.0...115.0 1000 s: (102.0...118.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

Test sheet : CUM 8,3 a74 : 02.05.90 Edition

Replaces

Test oil : ISO-4113

: 0 400 866 158 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV400...1100A0c2190 Governor design.

-47R

: 0 420 233 261 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 0 8.3 Engine

: 126.8 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - \* : 0.50 (0.75)

Time to cyi. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.70...10.80

Del.guantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 96.5...98.5 Del.quantity

1000 : (94.5...100.5)

cm3 : 3.50 Spread

1000 : (6,00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 27...35

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 10.70...10.80

rpm : 750 2nd speed

Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 750 rpm

Del.quantity cm3/: 119.5...123.5 1000 s: (117.5...125.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80, ... 6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: C.D.C. # 3918664

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

C24

Note remarks

Test sheet Edition : KHD 1 q 45 : 05.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 159

Injection pump

: PES6A85D410/3RS2761 Pump designation

EP type number : 0 410 886 895

Governor

: RSV325...1400A2C2245 Governor design.

: 0 420 232 537 Governer no.

Customer—spec. information Customer : KHD

: BF6L913T Engine

: 85.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 6.2...6.3

100 s: (6.0...6.5)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm : 8.0...8.2 Del.quantity cm3/: 1.3...1.9 100 s: (1.1...2.1) Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 62.5...63.5 Del.quantity 1000 : (60.5...65.5)

: 3.00 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 8.70

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1265...1295 Speed

3rd rack travel in: 4.00

rpm : 1285...1315 4th rack travel in: 1445 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring : 325 rpm Rack travel in mm: 6.2 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 rpm : 420...480 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.70...9.80 nd speed rpm : 500 Rack travel in m: 10.40...10.50 2nd speed 4th speed rpm : 985 Rack travel in m: 10.00...10.20 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 57.0...59.0 1000 s: (54.5...61.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.70 rpm : 1240...1250 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 17.80...18.20 Remarks:

: TM 2

**APPLICATION** 

Tractor (tractor engines)

Note remarks

: CUM 8,3 a77 Test sheet : 06.03.90 Edition

Replaces

: ISO-4113 Test oil

: 0 400 866 160 Combination no.

Injection pump

: PFS6A100b320/3RS2691 Pump designation

: 9 410 230 025 EP type number

Governor

: RSV470...1100A0C2190 Governor design.

-48R

: 0 420 233 262 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

: 150.6 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 12.10...12.20

Del.guantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.4Spread

100 s: (0.5)

rpm : 470.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 114.0...116.0 Del.quantity : (112.0...118.0) 1000

cm3 : 4.00

1000 : (6.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 48...56

Testina:

1st rack travel in: 11.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1205...1235 Speed

3rd rack travel in: 4.00

Speed rpm : 1210...1240 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 29...37

Setting point w/out bumper spring

: 470 rpm Rack travel in mm: 5.3

Testina:

: 100 Speed rpm Minimum rack trave: 19.00 : 470 Speed rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.10...12.20

rpm : 750 2nd speed

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...145.0

1000 s: (120.0...150.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 470
Rack travel in mm: 5.70...5.90
Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3917962

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

Adjust stop lever to 0.5...1.0 mm

before stop.

spring retainer.

Note remarks

: CUM 8,3 a78 Test sheet : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 866 161

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1000A0c2190

-49R

: 0 420 233 263 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

1st version kW : 151.4 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)
Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 12.10...12.20

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 119.0...121.0 Del.quantity 1000 : (117.0...123.0)

cm3 : 4.00 Spread 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 11.10 rpm : 1050...1060 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 3rd rack travel in: 4.00 Speed rpm : 1105...1135 4th rack travel in: 1175 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 5.2 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 400 Speed rpm Rack travel in mm : 5.60...5.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1050...1060 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.60...5.80 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 6.001000 s: (8.00) Remarks: : C.D.C. # 3915963 Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

: KHD 3,0 g Test sheet : 19.03.90 Edition

Replaces

Test oil : ISO-4113

: 0 400 873 038 Combination no.

Injection pump

Pump designation : PES3A80D410RS2790 EP type number : 0 410 883 011

Governor

: RSV325...900A7C602-1 Governor design.

: 0 420 232 388 Governer no.

Customer-spec. information Customer

: F3L912/W Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm : (1.85...2.05) Rack travel in mm : 9.00...12.00

: 1- 3- 2 Firing order

: 0-120-240 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.4)

cm3 : 0.2Spread

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 7.6...7.8 Del.quantity cm3/: 0.7...1.3

100 s: (0.5...1.4)

cm3 : 0.2 100 s: (0.3) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 51.5...52.5 Del.quantity

1000 : (50.0...54.0)

: 2.50 Spread cm3 : (4.00)

1000

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 9.50 Speed rpm : 940...950 2nd rack travel in: 4.00

rpm : 955...985 Speed

LOW IDLE 1

Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm: 325 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 315...375 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 45.5...47.5 1000 s: (43.5...49.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 940...950 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

: STE 3,4 a 1 : 27.10.89 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 874 247

Injection pump

Pump designation : PES4A85D410RS2746 EP type number : 0 410 884 946

Governor

: RSV300...1100A1c2227 Governor design.

: 0 420 232 491 Governer no.

Customer-spec. information Customer : STEYR

: WD408.45 Engine

: 46.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.85...2.95 Prestroke mm

: (2.80...3.00)

Rack travel in mm : 9.00...12.00

: 1- 3- 4- 2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 8.60...8.70

Del.quantity cm3/: 5.0...5.1

100 s: (4.8...5.3)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 300.02nd speed Rack travel in mm : 6.1...6.3 Del.guantity cm3/: 1.0...1.6

100 s: (0.8...1.7)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

1200 Speed rpm

50.5...51.5 Del.quantity

1000 : (48.5...53.5)

: 3.00 Spread cm3

> 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Testing:

1st rack travel in: 7.60 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1145...1175 Speed 3rd rack travel in: 4.00 rpm : 1155...1185 Speed 4th rack travel in: 1420 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 67...75 Setting point w/out bumper spring : 300 rom Rack travel in mm : 5.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 : 300 rpm Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rpm : 430...490 Speed TORQUE CONTROL Dimension a mm : 0.85 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 8.60...8.70 rpm : 500 2nd speed Rack travel in m: 9.40...9.50 4th speed rpm : 915 Rack travel in m: 9.00...9.10 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 47.0...49.0 1000 s: (44.5...51.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 7.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 90.0...100.0 1000 s: (87.0...103.0) Rack travel in mm : 19.50...21.00 Remarks:

Tractor (tractor engines)

006

APPLICATION

Note remarks

: STE 3,4 a 2 : 01.02.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 400 874 247 Combination no.

Injection pump

Pump designation : PES4A85D410RS2746 : D 410 884 946 EP type number

Governor

: RSV300...1200A1C2227 Governor design.

: 0 420 232 525 Governer no.

Customer-spec. information Customer : STEYR

: WD408.45 Engine

1st version kW : 46.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.85...2.95 Prestroke mm

: (2.80...3.00)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 8.60...8.70

Del.quantity cm3/ : 5.0...5.1

100 s: (4.8...5.3)

cm3 : 0.3 Spread

100 s: (0.5)

rpm : 300.02nd speed

Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 1.0...1.6 100 s: (0.8...1.7)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 50.5...51.5 Del.quantity

1000 : (48.5...53.5)

: 3.00 Spread cm3 : (5.00) 1000

RATED SPEED

1st version Control lever

position degrees: 105...113

Testing:

1st rack travel in: 7.60

Speed rpm: 1240...1250 2nd rack travel in: 4.00

rpm : 1245...1275 Speed

3rd rack travel in: 4.00

Speed rpm : 1255...1285

4th rack travel in: 1420

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 67...75

Setting point w/out bumper spring

: 300 Speed rpm Rack travel in mm: 5.2

Testing:

Speed : 100 rpm Minimum rack trave: 19.50 rpm : 300

Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00

rpm : 430...490 Speed

TORQUE CONTROL

Dimension a mm : 0.85

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 8.60...8.70

rpm : 500 2nd speed

Rack travel in m: 9.40...9.50

4th speed rpm : 915

Rack travel in m: 9.00...9.10

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom : 500

Measurement

 $1/\min : 500$ Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rom

Del.quantity cm3/: 47.0...49.0 1000 s: (44.5...51.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 7.60

rpm : 1240...1250 beed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity\_cm3/ : 90.0...100.0

1000 s: (87.0...103.0)

Rack travel in mm : 19.50...21.00

Remarks:

**APPLICATION** 

Tractor (tractor engines)

Note remarks

: MB 4,0 e 1 Test sheet : 02.01.90 Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 400 874 248

Injection pump

Pump designation : PES4A90D410RS2728 EP type number : 0 410 894 030

Governor

: RSV350...750A0C2240-Governor design.

1L

: 0 420 232 535 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M364

1st version kW : 39.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm:7001st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 5.7...5.9

100 s: (5.5...6.1)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 350.02nd speed Rack travel in mm: 6.9...7.1 Del.guantity cm3/: 1.0...1.4

100 s: (0.8...1.6)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.10

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 57.0...59.0 Del.quantity

1000 : (55.0...61.0)

Spread : 3.00 cm3

1000 : (4.50)

RATED SPEED

1st version Control Lever

position degrees: 76...84

Testing: 1st rack travel in: 11.00

rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rpm : 780...793 4th rack travel in: 850

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.0

Testing:

Speed : 100 rpm Minimum rack trave: 19.50 rpm : 350 Speed

Rack travel in mm: 6.90...7.10
Rack travel in mm: 2.00
Speed rpm: 375...405

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 16.50...16.90

Remarks:

Observe VDT-I-420/120

Note remarks

Test sheet : MB 5,7 o 6 : 15.03.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 192

Injection pump

Pump designation : PES6A90D410RS2293 : 0 410 896 031 EP type number

Governor

Governor design. : RSV575...1250A1C618L

: 0 420 232 407 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 352 Engine

: 88.3 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 12301st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.4)

rpm : 575.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.6 100 s: (0.8...1.8)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1230 Speed

: 61.0...62.0 Del.quantity 1000 : (59.0...64.0)

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.50

rpm : 1250...1260

Speed

2nd rack travel in: 4.00

rpm : 1275...1295 Speed

4th rack travel in: 1350

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 575 Rack travel in mm : 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed : 575 rpm Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm: 605...635 Speed rpm: 650 Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Remarks:

**APPLICATION** 

Combine-harvester

Note remarks

: MB 5,7 o 5 Test sheet : 15.03.90 Edition : 2.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 876 195

Injection pump

Pump designation : PES6A90D410RS2293Z EP type number : 0 410 896 037

Governor

Governor design. : RSV750...1250A1C618-

1L

: 0 420 232 513 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M352A Engine

1st version kW : 107.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1230 1st speed

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 7.4...7.5

100 s: (7.2...7.7)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 750.0 2nd speed Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1230 Speed rpm

: 74.5...75.5 : (72.5...77.5) Del.quantity 1000

: 3.00 cm3

Spread : (4.50) 1000

RATED SPEED

1st version Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.20

rpm : 1260...1270 Speed

2nd rack travel in: 4.00

rpm : 1295...1315

4th rack travel in: 1350

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 86...94

Setting point w/out bumper spring

: 750 rpm Rack travel in mm: 5.6 Sneed rpm: 750

Rack travel in mm: 5.50...5.70
Rack travel in mm: 2.00
Speed rpm: 760...790

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Remarks:

**APPLICATION** 

Combine-harvester

Note remarks

Test sheet : CAS 8,3 s : 14.02.1990 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 207

Injection pump

Pump designation : PES6A90D420LS2354

Governor

: RSV375...1050A2B710D Governor design.

Customer-spec. information Customer : CASE

: A-504 BDT Engine

TEST BENCH REQUIREMENTS

Test oil

: 35...45 inlet temp. °C

Inlet press., bar: 1.3

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - " : 0.5 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm: 9.00

Del.quantity cm3/: 4.8...5.1

100 s: (-)

cm3 : 0.5Spread

100 s: (-)

2nd speed rpm : 1000 Rack travel in mm : 12.00 Del.quantity cm3/: 8.6...9.4

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6.00

Del.quantity cm3/: 0.72...1.33

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 91.0...93.0 1000 : (-) Del.quantity

RATED SPEED

1st version Control lever

position degrees: 36...44

Testina:

1st rack travel in: 12.20 Speed rpm : 1060...1080

2nd rack travel in: 8.70

Speed rpm : 1085....1115 3rd rack travel in: 4.50...6.20 rpm : 1135...1165 Speed

4th rack travel in: 1250

rpm : 0.30...1.00Speed

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 7.80

Testing:

rpm : 150 Speed Minimum rack trave: 19.00 Speed rpm : 375

Rack travel in mm : 7.50...8.10 Rack travel in mm : 4.35 : 450 Speed rpm : 580 Speed rpm Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: -2nd speed rpm : 500 Rack travel in m: 0.10...0.40 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 91.0...95.0 1000 s: (-) Speed rpm : 650 Del.quantity cm3/: < 94.0 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: ? rpm : 1090...1105 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 134.0...144.0 1000 s: (-) HIGH IDLE 1st version rpm : 1150 Speed Del.quantity cm3/: 14.0...18.0 1000 s: (-) LOW IDLE Speed rpm : 375 Del.quantity cm3/: 18.0...22.5 1000 s: (-)

Remarks:

: CASE # A66215

Note remarks

: MB 5,7 q 7 : 07.07.89 Test sheet Edition : 9.3.87 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 257

Injection pump

Pump designation : PES6A90D410RS2293Z

EP type number : 0 410 896 037

Governor

Governor design. : RSV350...1300A0C1101

-2L

: 0 420 232 411 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 352 Engine

: 69.9 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Lenath mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 8.20...8.30

Del.guantity cm3/: 4.4...4.5

100 s: (4.2...4.7)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 350.02nd speed Rack travel in mm: 6.6...7.2 Del.quantity cm3/: 1.0...1.2

100 s: (0.8...1.4) cm3 : 0.2

Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

: 44.5...45.5 Del.quantity : (42.5...47.5) 1000

: 3.00 cm3

Spread : (4,50) 1000

RATED SPEED

1st version Control lever

position degrees: 109...117

Testing:

1st rack travel in: 7.20

rpm : 1340...1345 Speed

2nd rack travel in: 4.00

rpm : 1364...1377 Speed

3rd rack travel in: 4.00

rpm : 1390...1420 4th rack travel in: 1500 rpm : 0.30...1.40 Speed 5th rack travel in: 1345...1355 Speed rpm : 7.20 LOW IDLE 1 Control Lever position degrees: -3 Setting point w/out bumper spring : 350 Speed rpm Rack travel in mm: 6.7 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 350 rpm Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed : 450...510 man TORQUE CONTROL Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 8.20...8.30 : 500 2nd speed rpm Rack travel in m: 9.10...9.20 rpm : 900 3rd speed Rack travel in m: 8.90...9.10 4th speed rpm : 1075 Rack travel in m: 8.30...8.60 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 39.0...42.0 1000 s: (36.5...44.5) : 900 Speed rpm Del.quantity cm3/: 48.0...50.0 1000 s: (45.5...52.5) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 6.60...7.20 Del.quantity cm3/: 10.0...12.0 1000 s: (8.0...14.0) Spread cm3 : 2.00

APPLICATION

Unimog

D18

Remarks:

Note remarks

Test sheet : KHD 6,1 e 6 : 13.12.89 Edition

Replaces

Test oil : ISO-4113

: 0 400 876 274 Combination no.

Injection pump

Pump designation : PES6A95D410RS2471 : 0 410 896 952 EP type number

Governor

: RSV325...1150A8C707-Governor design.

6L

: 0 420 232 532 Governer no.

Customer—spec. information

Customer : KHD

: BF6L913C Engine

: 132.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 700

: 108.0...110.0 Del.quantity

1000 : (106.0...112.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.80

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

3rd rack travel in: 4.00 Speed rpm : 1285...1315 4th rack travel in: 1400 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.8 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 7.20...7.40 Rack travel in mm : 2.00 Speed rom : 585...645 TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 11.80...11.90 rpm : 500 2nd speed Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 700 Rack travel mm : 11.80...11.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.90...10.00 2nd pressure hPa : 373 Rack travel in m: 11.50...11.60 3rd pressure hPa : 93 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

rpm : 850 Speed Del.quantity cm3/: 103.5...106.5 1000 s: (101.0...109.0) 1000 s: (7.) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 62.0...64.0 1000 s: (60.0...66.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 15.50...15.90

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

The stop position of the control rod must be easily reached with the stop lever

**APPLICATION** 

Installation 2300

Note remarks

: MB 5,7 q 20 : 02.01.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 400 876 312 Combination no.

Injection pump

Pump designation : PES6A90D410RS2293-1

EP type number : 0 410 896 077

Governor

Governor design. : RSV350...1400A0c745-

: 0 420 232 530 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 352 A Engine

1st version kW : 115.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1380 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.5...7.6

100 s: (7.3...7.8)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1380 Speed rpm

: 75.5...76.5 Del.quantity 1000 : (73.5...78.5)

: 3.00 Spread cm3

: (4.50) 1000

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 10.90

rpm : 1420...1430 Speed

2nd rack travel in: 4.00

rpm : 1510...1540 Speed

3rd rack travel in: 4.00

Speed rpm : 1530...1560 4th rack travel in: 1700 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 79...87 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.4 Testina: : 100 Speed rpm Minimum rack trave: 19.00 Speed rpm: 350 Rack travel in mm: 7.80...8.00 Rack travel in mm : 2.00 : 550...610 Speed rpm FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 64.0...67.0 1000 s: (61.5...69.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1420...1430 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 88.0...98.0 1000 s: (85.0...101.0) Rack travel in mm : 16.20...16.60 Remarks:

Note remarks

: LIE 8,4 a Test sheet Edition : 07.02.89 : 9.10.87 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 322

Injection pump

Pump designation : PES6A95D410RS2689 EP type number : 0 410 896 916

Governor

Governor design. : RSV400...1000A1c2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D906 NA Engine

1st version kW : 112.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: 3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 87.0...89.0 Del.quantity : (85.0...91.0) : 3.50 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testina: 1st rack travel in: 9.40 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1050...1080 Speed 3rd rack travel in: 4.00 rom : 1090...1120 Speed 4th rack travel in: 1230 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm: 5.9 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 400 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 530...590 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 10.40...10.50 2nd speed rpm : 500 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 77.5...80.5 1000 s: (75.0...83.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.40 Speed rpm : 1040...1050 INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.30...6.50 Del.quantity cm3/ : 10.0...16.0 1000 s: (7.5...18.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

:

Note remarks

: DAF 6,2 o 3 : 12.04.90 Test sheet Edition : 2.10.89 Replaces : ISO-4113 Test oil

: 0 400 876 327 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

: RSV300...1300A0c2195 Governor design.

: 0 420 233 200 Governer no.

Customer-spec. information Customer : DAF

: DNT 620 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50 Firing order

: 1-5- 3- 6-

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl, no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 700

Anerow Del.quantity 1000 : 77.0...79.0

: (75.0...81.0)

cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing: 1st rack travel in: 9.70 Speed rpm: 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1400...1430 3rd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1580 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.1 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 300 rom Rack travel in mm : 6.50...6.70 Rack travel in mm: 2.00 rpm : 600...660 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1290 1st speed Rack travel in m: 10.70...10.80 nd speed rpm : 500 Rack travel in m: 11.60...11.70 2nd speed 4th speed rpm : 1060 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 11.60...11.70 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.10...11.30 2nd pressure hPa : 250 Rack travel in m: 11.50...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 1290 Speed

Del.quantity cm3/: 74.0...76.0

1000 s: (71.5...78.5)

Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 65.5...66.5 1000 s: (63.5...68.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1340...1350 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 130.0...145.0

1000 s: (127.0...148.0) Rack travel in mm : 19.50...21.00

rpm : 300 Speed Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50Spread

1000 s: (5.50)

Remarks: :

LOW IDLE

D26

Note remarks

Test sheet : DAF 6,2 o 2 : 12.01.90 Edition : 8.9.89 Replaces : ISO-4113 Test oil

: 0 400 876 332 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

: RSV300...1300A0C2206 Governor design.

: 0 420 233 204 Governer no.

Customer-spec. information Customer

: DNTD 620 Engine

1st version kW : 110.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.5...6.7

100 s: (6.3...6.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rom : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

: 65.0...67.0 Del.quantity

1000 : (63.0...69.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 108...116 Testing: 1st rack travel in: 9.20 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1400...1430 Speed 3rd rack travel in: 4.00 Speed rpm : 1425...1455 4th rack travel in: 1570 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 76...84 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 300 rpm Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed rpm : 590...650 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.20...10.40 2nd speed rpm : 500 Rack travel in m: 10.80...10.90 4th speed rpm : 1005 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version : 1290 Speed rpm Del.guantity cm3/: 69.0...71.0 1000 s: (66.5...73.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed : 100 rpm

Del.quantity cm3/: 130.0...145.0

1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00 LOW IDLE : 300 Speed rpm Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50Spread 1000 s: (5,50) Remarks:

Note remarks

: DAF 6,2 o 1 : 06.04.90 Test sheet Edition : 29.3.89 Replaces : ISO-4113 Test oil

: 0 400 876 333 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2693Z : 0 410 896 913

EP type number

Governor

: RSV300...1300A0c2195 Governor design.

: 0 420 233 200 Governer no.

Customer-spec. information Customer : DAF

: DNS 620 Engine

: 150.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.8...8.9

100 s: (8.6...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 0.7...1.1 100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 700

: 88.5...89.5 Del.quantity 1000 : (86.5...91.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever 1st version Aneroid pressure h: 700 position degrees: 104...112 Speed rpm : 1290 Del.quantity cm3/: 88.0...90.0 Testina: 1000 s: (85.5...92.5) 1st rack travel in: 10.70 rpm : 1340...1350 Aneroid pressure h: -2nd rack travel in: 4.00 rpm : 600 Speed Del.quantity cm3/: 65.5...66.5 1000 s: (63.5...68.5) rpm : 1410...1440 Speed 3rd rack travel in: 4.00 rpm : 1440...1470 Speed 4th rack travel in: 1595 Speed BREAKAWAY rpm : 0.30...1.40LOW IDLE 1 1st version 1mm rack travel less than Control lever position degrees: 75...83 Setting point w/out bumper spring full load rack tr: 10.70 rpm : 1340...1350 Speed rpm Rack travel in mm: 5.9 STARTING FUEL DELIVERY Testina: Speed rpm : 100 : 100 Minimum rack trave: 19.50 Speed rpm : 300 Del.quantity cm3/: 130.0...145.0 rpm 1000 s: (127.0...148.0) Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Rack travel in mm : 19.50...21.00 Speed : 580...640 man LOW IDLE TORQUE CONTROL Torque control curve - 1st version : 300 Speed rpm Rack travel in mm : 6.30...6.50 1st speed rpm : 1290 Rack travel in m: 11.70...11.90 and speed rpm : 500 Rack travel in m: 12.10...12.20 Del.quantity cm3/ : 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50 1000 s: (5.50) 2nd speed Spread rpm : 1020 4th speed Rack travel in m: 11.90...12.10 Remarks: Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 700 : 12.10...12.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 290 Rack travel in m: 11.90...12.00 3rd pressure hPa : 250 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : DAF 6,2 o 6 Edition : 07.02.89

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 342

Injection pump

Pump designation : PES6A95D32ORS2693W

EP type number : 0 410 896 907

Governor

: RSV250...750A7C2206-Governor design.

1R

: 0 420 233 209 Governer no.

Customer—spec. information : DAF Customer

: DNS 620 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.60...13.70

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 101.0...103.0 Del.quantity

1000 : (99.0...105.0)

3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever position degrees: 90...98

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.4 : 300 Speed rpm

Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed rpm : 315...375

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Rack travel in mm : 19.50...21.00

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

**APPLICATION** 

Generator

Note remarks

Test sheet : DAF 6,2 o 7 Edition : 07.02.89

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 876 343

Injection pump

Pump designation : PES6A95D32ORS2693V

EP type number

: 0 410 896 908

Governor

: RSV250...900A7C22G6-Governor design.

2R

: 0 420 233 208 Governer no.

Customer-spec. information Customer : DAF

: DNS 620/1800 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina (

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 13.60...13.70

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 101.0...103.0 Del.quantity

1000 : (99.0...105.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 12.60 rpm : 895...900 Speed 2nd rack travel in: 4.00 rpm : 935...950 Speed 4th rack travel in: 1090 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 72...80

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.4

Testina:

: 100 Speed rpm : 300 Speed rpm

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00 Speed rpm : 315...375

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

: 100 rpm

Rack travel in mm : 19.50...21.00

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

APPLICATION

Generator

Note remarks

: KHD 1 o 1 Test sheet : 01.02.90 Edition : 18.8.89 Replaces : ISO-4113 Test oil

: 0 400 876 344 Combination no.

Injection pump

Pump designation : PES6A95D410RS2625 : 0 410 896 926 EP type number

Governor

Governor design. : RSV325...1250A2C1159

: 0 420 232 490 Governer no.

Customer-spec. information Customer

: BF6L913C Engine

1st version kW : 130.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rbm: 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8)

Spread

cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 900

: 93.0...95.0 Del.quantity

1000 : (91.0...97.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 92...100

Testina:

1st rack travel in: 10.60

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1320...1350 Speed

3rd rack travel in: 4.00 Speed rpm : 1370...1400 4th rack travel in: 1540 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 63...71 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 350 Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 Speed rpm : 575...635 TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 11.60...11.70 rpm : 500 2nd speed Rack travel in m: 12.00...12.10 4th speed rpm : 1105 Rack travel in m: 11.70...11.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 900 Pressure : 12.00...12.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 550 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 1000 Speed Del.quantity cm3/: 94.5...97.5 1000 s: (92.0...100.0)

: 500 Speed rpm Del.quantity cm3/: 54.0...56.0 1000 s: (52.0...58.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 17.10...17.30

Remarks:

**APPLICATION** 

Combine-harvester

Speed

Aneroid pressure h: 900

Aneroid pressure h: -

rpm : 1150

1000 s: (89.5...97.5)

Del.quantity cm3/: 92.0...95.0

Note remarks

: FIA 5,9 c Test sheet : 30.03.90 Edition : 28.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 876 349

Injection pump

Pump designation : PES6A90D410RS2757 EP type number : 0 410 896 086

Governor

Governor design. : RSV425...1000A1c2233

: 0 420 232 496 Governer no.

Customer-spec. information Customer : IVECO-FIAT

: 8065.25.080 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 9.0...9.1

100 s: (8.8...9.3)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 475.0 2nd speed Rack travel in mm: 7.1...7.3 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2 100 s: (0.4) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rom : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 800

: 90.0...91.0 Del.quantity 1000 : (88.0...93.0)

: 3.00 Spread cm3

1000

RATED SPEED

1st version Control Lever

position degrees: 101...109

Testing:

1st rack travel in: 10.80

Speed rpm: 1040...1050 2nd rack travel in: 4.00

rpm : 1090...1120 Speed

3rd rack travel in: 4.00

rpm : 1140...1170 Speed 4th rack travel in: 1240

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 77...85 Setting point w/out bumper spring

rpm : 475 Speed Rack travel in mm: 6.7

Testing:

: 100 Speed rom Minimum rack trave: 19.50

Speed rpm: 475
Rack travel in mm: 7.10...7.30

Rack travel in mm : 2.00

rpm : 495...555 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed

t speed rpm : 1000 Rack travel in m: 11.80...11.90

rpm : 500 2nd speed

Rack travel in m: 11.80...12.00

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm hPa : -Pressure

: 11.30...11.50 Rack travel mm

Measurement

Speed 1/min: 500 2nd pressure hPa: 780

Rack travel in m: 11.70...11.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

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E10

Note remarks

: DAF 6,2 o 5 : 12.01.90 Test sheet Edition : 2.10.89 Replaces Test oil : ISO-4113

: 0 400 876 356 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

: RSV300...13D0A0c2195 Governor design.

-1R

: 0 420 233 222 Governer no.

Customer-spec. information : DAF Customer

: DNT 620 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50 Firing order : 1-5-3-6-

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...6.7

Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 700

: 77.0...79.0 Del.quantity 1000 : (75.0...81.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 106...114

Aneroid pressure h: -Testing: 1st rack travel in: 9.70 rpm : 600 Speed Del.quantity cm3/: 65.5...66.5 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 1000 s: (63.5...68.5) rpm : 1400...1430 Speed 3rd rack travel in: 4.00 rpm : 1425...1455 Speed **BREAKAWAY** 4th rack travel in: 1580 Speed rpm : 0.30...1.401st version 1mm rack travel less than LOW IDLE 1 Control lever full load rack tr: 9.70 rpm : 1340...1350 position degrees: 75...83 Speed Setting point w/out bumper spring rpm : 300 STARTING FUEL DELIVERY Speed Rack travel in mm: 6.1 rpm : 100 Speed Testing: Del.quantity cm3/: 130.0...145.0 1000 s: (127.0...148.0) rpm : 100 Speed Minimum rack trave: 19.50 : 300 Rack travel in mm : 19.50...21.00 Speed rom Rack travel in mm : 6.50...6.70 Rack travel in mm : 2.00 LOW IDLE rpm : 600...660 Speed rpm : 300 Speed Rack travel in mm : 6.50...6.70 TORQUE CONTROL Del.quantity cm3/: 7.0...11.0 Torque control curve - 1st version rpm : 1290 1000 s: (4.5...13.5) 1st speed Rack travel in m: 10.70...10.80 cm3 : 3.50Spread 2nd speed rpm : 500 1000 s: (5.50) Rack travel in m: 11.60...11.70 4th speed rpm : 1060 Rack travel in m: 11.00...11.20 Remarks: Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 11.60...11.70 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.10...11.30 2nd pressure hPa : 250 Rack travel in m: 11.50...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 1290 Del.quantity cm3/ : 74.0...76.0 1000 s: (71.5...78.5)

Note remarks

: DEE 7,7 d 2 : 06.03.90 Test sheet Edition : 28.9.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 360

Injection pump

Pump designation : PES6A100D410RS2762 : 0 410 806 003 EP type number

Governor

Governor design. : RSV425...1100A2C2225

: 9 420 234 176 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6076ARW-06 Engine

: 146.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900 Del.quantity : 114.0...116.0 Aneroid P. Del.quantity 1000 : (112.0...118.0)

cm3 : 4.00Spread

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 40...48

Testing: 1st rack travel in: 10.80 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1205...1215 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 425 Rack travel in mm : 4.5 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 425 Rack travel in mm : 4.90...5.10 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.80...11.90 2nd speed rpm : 650 Rack travel in m: 13.70...13.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 900 Pressure : 13.70...13.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 535 Rack travel in m: 12.30...12.40 3rd pressure hPa : 720 Rack travel in m: 13.30...13.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 650 Speed Del.quantity cm3/: 147.5...150.5 1000 s: (145.0...153.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 129.0...133.0

1000 s: (126.0...136.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 425 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: JOHN DEERE # RE29298

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 13,5° after start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

Note remarks

: DEE 7,7 d 3 : 06.03.90 Test sheet Edition : 2.5.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 876 361

Injection pump

Pump designation : PES6A100D410RS2762 : 0 410 806 003

EP type number Governor

: RSV400...1100A2C2204 Governor design.

-41

: 0 420 232 500 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6076 ADW-01 Engine

: 146.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 3.1...3.5

100 s: (2.8...3.7)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 112.0...114.0 Del.quantity 1000 : (110.0...116.0)

: 4.00 cm3

1000 : (6.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 40...48

Testing:

E15

1st rack travel in: 10.60 Speed rpm : 1145...1155 2nd rack travel in: 4.00 rpm : 1210...1220 Speed 3rd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1350 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testina: Speed rpm : 100 Minimum rack trave: 19.00 Speed : 400 rpm Rack travel in mm : 5.80...6.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.60...11.70 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 rpm : 1145...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0) LOW IDLE Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 31.0...35.0 1000 s: (28.5...37.5) cm3 : 6.00 Spread 1000 s: (8.00) Remarks: : JOHN DEERE # RE35847 Start-of-delivery mark = 13,5° after start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,7 e : 06.03.90 Edition : 7.4.89 Replaces Test oil : ISO-4113 Combination no. : 0 400 876 362 Injection pump Pump designation : PES6A100D410RS2764 EP type number : 0 410 806 004 Governor : RSV600...1100A2C2161 Governor design. <del>-6</del>L : 0 420 232 505 Governer no. Customer-spec. information : JOHN DEERE Customer : 6466 AZ Engine : 152.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Lenath mm : 6.00x2.00x600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values \_ BEGINNING OF DELIVERY Test pressure, bar: 27...29 : 2.45...2.55 Prestroke mm : (2.40...2.60)

Rack travel in mm : 10.50 : 1-5- 3- 6- 2- 4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 12.50...12.60 Del.quantity cm3/: 12.9...13.1 100 s: (12.7...13.3) cm3 : 0.4Spread 100 s: (0.6) rpm : 600.0 2nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.4...1.8 100 s: (1.1...2.0) Spread cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 900 : 129.5...131.5 Del.quantity 1000 : (127.5...133.5) Spread cm3 : 4.00 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 37...45 Testing: 1st rack travel in: 11.50

rpm : 1145...1155

Speed

2nd rack travel in: 4.00

rpm : 1195...1205 Speed

3rd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 600 Rack travel in mm: 5.2

Testing:

: 100 Speed rom Minimum rack trave: 19.00 : 600 Speed rpm

Rack travel in mm : 5.60...5.80

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.50...12.60 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 175

Rack travel in m: 10.10...10.20 3rd pressure hPa : 285

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 68.5...72.5

1000 s: (65.5...75.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.50

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0

1000 s: (175.0...205.0)

LOW IDLE

Speed rpm : 600 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 14.0...18.0

1000 s: (11.5...20.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE35281

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of

delivery.

Starting/full-load transition speed from holding magnet = 450 1/min.

Note remarks

: DEE 7,7 f Test sheet Edition : 06.03.90 Replaces : 28.9.89 : TSO-4113 Test oil

Combination no. : 0 400 876 363

Injection pump

Pump designation : PES6A100D410RS2765 EP type number : 0 410 806 005

Governor

Governor design. : RSV400...1100A2C2204

-5L

: 0 420 232 506 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6466AT-01 Engine

: 125.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm

: (2.40...2.60)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75)Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELTY. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 110.0...112.0 Del quantity 1000 : (108.0...114.0)

cm3 : 4.00

Spread 1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90

rpm : 1145...1155

2nd rack travel in: 4.00

rpm : 1220...1230 Speed 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.5

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.90...11.00

2nd speed rpm : 700

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 114.5...117.5 1000 s: (112.0...120.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.90

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 180.0...200.0 1000 s: (175.0...205.0)

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

: 6.00 Spread cm3

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE35282

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of delivery.

Starting/full-load transition speed from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MB 6,0 c 7 Phasing : 0-60-120-180-240-300 Edition : 23.03.90 : 7.7.89 : 0.50 (0.75) Replaces Tolerance + - ° Test oil : ISO-4113 BASIC SETTING Combination no. : 0 400 876 367 rpm: 700 1st speed Injection bumb Rack travel in mm : 12.20...12.30 Pump designation : PES6A90D410RS2710-1 : 0 410 896 084 EP type number Del.quantity cm3/: 6.4...6.5 Governor Governor design. : RSV350...750A0C2240L Governor no. : 0 420 232 527 100 s: (6.2...6.7) cm3 : 0.3Customer-spec. information Spread : DAIMLER-BENZ Customer 100 s: (0.5) : OM 366 Enaine 2nd speed rpm : 350.0 Rack travel in mm : 8.2...8.4 1st version kW : 60.0 Del.quantity cm3/: 0.6...1.2 : 1500 Rated speed 100 s: (0.4...1.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.2100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: rpm : 600 : 1 417 413 000 Speed Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Click setting x :? Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening : 172...175 1st version pressure, bar rpm : 700 Speed : 64.0...65.0 Del.quantity 1000 : (62.0...67.0) : 1 680 750 015 Test lines : 3.00 Spread cm3 1000 : (5.00) Outside diameter x Wall thickness : 6.00x1.50x600 RATED SPEED x Lenath mm

> 1st version Control lever

position degrees: 82...90

Testing:

1st rack travel in: 11.20
Speed rpm: 750...755
2nd rack travel in: 4.00
Speed rpm: 780...793
4th rack travel in: 900
Speed rpm: 0.30...1.40

(A) Injection pump setting values

Set equal delivery quant.

Rack travel in mm : 9.00...12.00

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm

Insp. values in parentheses

: 2.25...2.35

: (2.20...2.40)

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 8.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350

Rack travel in mm : 8.10...8.30

Rack travel in mm : 2.00 Speed rpm : 380...420

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 16.50...16.90

Remarks:

•

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : KHD 1 o 4 Edition : 01.12.89

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 368

Injection pump

Pump designation : PES6A95D41ORS2625 : 0 410 896 926 EP type number

Governor

: RSV325...1250A2C2205 Governor design.

-2L

: 0 420 232 531 Governer no.

Customer-spec. information Customer : KHD

: BF6L913C Engine

: 131.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm : 6.4...6.6

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 900

: 96.0...98.0 Del.quantity : (94.0...100.0) 1000

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 10.60

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

3rd rack travel in: 4.00 Speed rpm : 1380...1410 4th rack travel in: 1545 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring : 325 rpm Rack travel in mm: 6.0 Testing: Speed : 100 rpm Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 560...620 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 11.60...11.70 and speed rpm : 500 Rack travel in m: 11.60...11.80 2nd speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 11.60...11.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 330 Rack travel in m: 11.20...11.30 3rd pressure hPa : 160 Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 850 Speed Del.quantity cm3/: 91.5...94.5 1000 s: (89.0...97.0) Aneroid pressure h: rpm\_ : 500 Speed Del.quantity cm3/: 58.0...60.0 1000 s: (56.0...62.0)

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 15.80...16.20

Remarks:

.

Note remarks

Test sheet : MB 6,0 c 8 Edition : 19.03.90

Replaces

Test oil : ISO-4113

: 0 400 876 370 Combination no.

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

: RSV750...125GA0C2006-Governor design.

6L

: 0 420 232 534 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M 366 Engine

: 92.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C ; 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1230 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity m3/: 6.8...6.9

100 s: (6.6...7.1)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 750.0 2nd speed Rack travel in mm : 6.5...6.7 Del.quantity cm3/ : 1.4...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1230 Speed

: 68.5...69.5 Del.quantity

1000 : (66.5...71.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.40 Speed rpm : 1270...1280

2nd rack travel in: 4.00

rpm : 1316...1333 Speed

4th rack travel in: 1425

: 0.30...1.40 Speed rpm LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring rpm : 750 Rack travel in mm : 6.6 Testing: : 100 rpm Speed Minimum rack trave: 19.50 rpm : 750 Speed Rack travel in mm : 6.50...6.70 Rack travel in mm : 2.00 Speed rpm : 760...820 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 52.0...54.0 1000 s: (49.5...56.5) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 17.00...17.40 Remarks: **APPLICATION** Generator

Note remarks

Test sheet : DEE 7,6 h15 Edition : 02.05.90

Replaces

Test oil : ISO-4113

: 0 400 876 371 Combination no.

Injection pump

Pump designation : PES6A100D410RS2676-1

: 9 410 230 024 EP type number

Governor

Governor design. : RSV450...1050A0C2204

-6L

Governer no. : 0 420 232 539

Customer-spec. information

Customer : JOHN DEERE

: 6466AT13 Enaine

: 120.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm : (2.40...2.60)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.10...10.20

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 450.02nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.7...2.1 100 s: (1.5...2.3)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1050

: 101.5...103.5 : (99.5...105.5) Del.quantity 1000

: 4.00 cm3

1000 : (6.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 9.10 rpm : 1095...1105 Speed 2nd rack travel in: 4.00 rpm : 1180...1190 Speed 3rd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 5.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 450 Speed Rack travel in mm : 5.40...5.60 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 10.10...10.20 2nd speed rpm : 650 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650 Del.quantity cm3/: 112.0...116.0 1000 s: (110.0...118.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 Speed rpm : 1095...1105 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

rpm : 450

Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 17.5...21.5 1000 s: (15.5...23.5) Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE44344 Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of delivery.

Starting/full-load transition speed from holding magnet = 450 1/min.

LOW IDLE

Speed

Note remarks

Test sheet : HAN 10,8 f7 Edition : 24.02.89

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 076 008

Injection pump

Pump designation : PE6A100D320RS3030-1

EP type number : 0 411 006 019

Governor

Governor design. : RSV350...700A0C2228R

Governer no. : 0 420 233 214

Customer—spec. information Customer : HANOMAG

Engine : D963A2/G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90

: (1.75...1.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 5.50...6.50

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 16.4...16.6

100 s: (16.2...16.8)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 164.0...166.0

1000 : (162.0...168.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 85...93

Testing:

1st rack travel in: 10.00

Speed rpm: 740...750 2nd rack travel in: 4.00 Speed rpm: 825...855

4th rack travel in: 980

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 74...82

Setting point w/out bumper spring

: 350 rpm Speed Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

: 375...435 Speed rpm

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 11.00...11.10

2nd speed

nd speed rpm : 500 Rack travel in m: 11.00...11.20

: 370 5th speed rpm

Rack travel in m: 12.20...12.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

rpm : 740...750 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 215.0...225.0 1000 s: (212.0...228.0) Rack travel in mm: 19.50...21.00

Remarks:

APPLICATION

Generator set

#### Note remarks

Test sheet : BAO 31,8 d1 : 02.01.90 Edition Replaces

: ISO-4113 Test oil

: 0 401 830 714 Combination no.

Injection pump

Pump designation : PE12P13OA12ORS3127

: 0 411 830 704 EP type number

Governor

Governor design: : RQV400...750PA934

: 0 421 813 816 Governer no.

Customer-spec, information : BAUDOUIN Customer

: 12 P 15-2 Engine

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing 180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

# BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 30.7...31.0

100 s: (30.3...31.3)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 400.0 2nd speed Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 2.1...2.7

100 s: (1.7...3.1)

cm3 : 1.0 Spread 100 s: (1.4)

# (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 375 1st speed : 0.50...0.70 travel mm

2nd speed : 450 rpm

: 2.00...2.10 travel mm

: 650 3rd speed rpm : 2.00...2.10 travel mm

: 750 4th speed man

: 3.30...5.30 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 307.0...310.0 Del.quantity 1000 : (303.5...313.5)

: 6.00 Spread cm3

: (10.00) 1000

RATED SPEED

1st version

Testing:

1st rack travel in: 11.60 Speed rpm : 750...755 2nd rack travel in: 4.00 Speed rpm : 776...789 4th rack travel in: 900

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 2...10

Testing:

rpm : 100 Speed Minimum rack trave: 6.40 Speed rpm: 400 Rack travel in mm : 4.80...5.00

Rack travel in mm: 2.00

START CUT-OUT

Speed 1/min: 340 (360)

Remarks:

APPLICATION

Generator

Note remarks

: BAO 31,8 d : 02.01.90 Test sheet Edition : 2.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 830 715

Injection pump

Pump designation : PE12P13OA12ORS3127 : 0 411 830 704 EP type number

Governor

Governor design. : RQV350...900PA934-2

: 0 421 813 818 Governer no.

Customer-spec. information Customer : BAUDOUIN

: 12 P 15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no.

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 30.9...31.2

100 s: (30.4...31.6)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 350.02nd speed Rack travel in mm: 5.2...5.6 Del.quantity cm3/: 2.0...2.6 100 s: (1.6...3.0)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.10...1.30 travel mm

2nd speed rpm : 500

travel mm : 3.10...3.80

3rd speed : 750 rbm

: 6.00...6.40 travel mm

4th speed rpm 900

: 7.90...8.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 940 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

"1st version

900 Speed rpm:

309.0...312.0 Del.quantity

1000 : (304.0...316.0)

Spread cm3 : 6.00 1000 : (10.00)

F05

### RATED SPEED

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.90 rpm : 940...950 Speed

2nd rack travel in: 4.00

Speed rpm : 1005...1035 4th rack travel in: 1150 Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 26...34

Testing:

: 100 Speed rpm Minimum rack trave: 6.90 rpm : 350 Speed

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 940...950 Speed

Remarks:

APPLICATION

Navy

Note remarks

: MAN 20,9 d2 Test sheet : 05.08.88 Edition

Replaces

Test oil : ISO-4113

: 0 401 840 095 Combination no.

Injection pump

Pump designation: PE12P110A520LS839-1

EP type number : 0 411 810 043

Governor

Governor design. : RQV250...1150PA670

Governer no. : 0 421 813 387

Customer-spec. information Customer : MAN

: D2542 MTE Engine

: 386.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

(2.95...3.15)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-Firing order 4- 11- 10- 2- 6- 7

Phasina : 0-45-60-105-120-165-180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 14.2...14.5

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 6.8...7.0 Del.guantity cm3/: 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 2501st speed

1.20...1.30 travel mm 2nd speed rpm : 550

travel mm : 3.50...4.00

950 3rd speed rom

: 6.60...6.90 travel mm

4th speed : 1150 rpm

: 3.20...8.40 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

Speed rpm : 1170 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 700

Del.quantity : 142.0...(7.5)

cm3 : 4.00Spread 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 61...69 Testing: 1st rack travel in: 11.30 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1295...1325 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 8...16 Testing: : 100 Speed rpm Minimum rack trave: 8.40 rpm : 250 Rack travel in mm : 6.80...7.00 CONSTANT REGULATION rpm : 290...395 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rom Pressure Rack travel mm : 12.30...12.40 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.60 2nd pressure hPa : 280 Rack travel in m: 11.80...11.90 3rd pressure hPa : 180 Rack travel in m: 10.90...11.10 START CUT-OUT

1/min: 200 (220)

FUEL DELIVERY CHARACTERISTICS

rpm : 500

Del.quantity cm3/: 98.0...101.0 1000 s: (95.5...103.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE Speed rpm Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 14.0...19.0 1000 s: (11.5...21.5) Spread cm3 : 4.501000 s: (7.50) Remarks:

Speed

Speed

1st version

Aneroid pressure h: -

Note remarks

Test sheet : MAN 20,9 z Edition : 07.04.89 Replaces : 16.5.88 Test oil : ISO-4113

Combination no. : 0 401 840 108

Injection pump

Pump designation : PE12P110A520/4LS849

: 0 411 810 041 EP type number

Governor

: RQV250...1050PA889 Governor design.

: 0 421 813 696 Governer no.

Customer-spec. information : MAN Customer

Engine : D2842ME

: 305.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-Firing order 4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 12.8...13.1

100 s: (12.6...13.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.5...2.0

100 s: (1.2...2.2) Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.90...1.30 travel mm rpm : 800 2nd speed

travel mm

: 5.30...5.70 : 1050 3rd speed

rpm : 7.50...7.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 128.5...131.5 Del.quantity

1000 : (126.0...134.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 9.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1170...1200 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

rpm : 100 Speed Minimum rack trave: 7.10 Speed rpm: 250

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 385...510 Speed

START CUT-OUT

1/min: 190 (210) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40

rpm : 1090...1100 Speed

Remarks:

: MAN-NR. 2-7905

APPLICATION

Rail car

Note remarks

: MB 21,9 k Test sheet Edition : 12.11.87 : 12.9.86 Replaces Test oil : TSO-4113

Combination no. : 0 401 840 742

Injection pump

Pump designation : PE12P120A320LS3836-1

: 0 411 820 718 EP type number

Governor

Governor design. : RQV350...1150PA493-3

: 0 421 813 422 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 424 LA Engine

: 452.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 18.0...18.2

100 s: (17.7...18.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 2.20...2.30 rpm : 510 travel mm

2nd speed

: 3.20...3.50 travel mm

rpm : 1150 3rd speed : 7.50...8.80 travel mm

rpm : 12004th speed

: 8.90...9.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1180 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1150 Speed Aneroid pressure h: 700 : 180.0...182.0 Del.quantity 1000 : (177.0...185.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 61...69 Testing: 1st rack travel in: 11.10 rpm : 1190...1200 2nd rack travel in: 4.00 rpm : 1235...1265 Speed 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 8...16 Testina: : 100 Speed man Minimum rack trave: 6.20 rpm : 350 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 400...600 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -Rack travel mm : 10.00...10.20 Measurement 1/min: 500 Speed 1st pressure hPa : 470 Rack travel in m: 10.70...10.90 2nd pressure hPa : 540 Rack travel in m: 11.40..11.60 START CUT-OUT 1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 : 650 Speed rpm Del.quantity cm3/: 182.0...188.0 1000 s: (179.0...191.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 700 Speed rpm : 1150 Del.quantity cm3/: 134.0...138.0 \* 1000 s: (131.0...141.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.guantity cm3/: 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

\* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

: MB 21,9 n 1 : 05.03.90 Test sheet Edition : 12.9.86 Replaces Test oil : ISO-4113

Combination no. : 0 401 840 750

Injection pump

Pump designation : PE12P110A320LS3837-2

EP type number : 0 411 810 711

Governor

Governor design. : RQV350...1150PA378-4

: 0 421 813 521 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 424 Engine

: 309.0 : 2300 1st version KW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-Firing order

4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 345 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm : 1150 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.7)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 350.0 2nd speed Rack travel in mm: 7.7...8.0

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 122.0...124.0 Del.quantity

1000 : (119.0...127.0)

: 4.00 Spread cm3 1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testina:

1st rack travel in: 10.40

rpm : 1170...1180 Speed

2nd rack travel in: 4.00 Speed rpm : 1235...1265 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 16...22 Testina: : 100 Speed mom Minimum rack trave: 9.00 : 350 Speed rpm Rack travel in mm : 7.80...8.00 CONSTANT REGULATION rpm : 375...485 Speed START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 96.0...100.0 1000 s: (93.0...103.0) Spread cm3 : 6.001000 s: (9.00) : 1150 Speed rpm Del.quantity cm3/: 90.0...94.0 \* 1000 s: (87.0...97.0) Spread cm3 : 6.001000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1170...1180 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 130.0...140.0 1000 s: (126.0...144.0) Remarks: Adjust stop lever to 0.5...1.0 mm before stop. \* = Set at reduced-delivery stop.

F14

Note remarks

: SSC 24,7 a Test sheet : 05.03.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 840 761

Injection pump

Pump designation : PE12P12OA52ORS3168-1

EP type number : 0 411 820 727

Governor

Governor design. : RQV350...1250PA852

Governer no. : 0 421 813 601

Customer-spec. information Customer : SSCM

: UD20-V12 Engine

: 810.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 680 750 075 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-8-5-10-3-7-6-11-2-9-4-12

: 0-15-60-75-120-135-Phasing

180-195-240-255-300-

Phasing 315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0Rack travel in mm : 4.5...4.9 Del.quantity cm3/ : 2.0...2.3

100 s: (1.7...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.40...1.60 rpm : 900

2nd speed travel mm

: 4.90...5.20

rpm : 1250 3rd speed

: 7.80...8.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1300 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 289.0...291.0 Del.quantity 1000 : (286.0...294.0)

: 5.00 Spread cm3

1000 : (9.00)

### RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 12.00

Speed rpm : 1290...1300

2nd rack travel in: 4.00 Speed rpm: 1400...1430 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testina:

rpm : 100Speed Minimum rack trave: 6.20 rpm : 350 Speed

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 420...540 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1290...1300

:

Remarks:

APPLICATION

Navy

Note remarks

Test sheet : BAO 14,9 b Edition : 05.03.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 840 768

Injection pump

Pump designation : PE12P110A520RS3241

EP type number

: 0 411 810 713

Governor

Governor design. : RQV325...1500PA931

: 0 421 813 805 Governer no.

Customer-spec. information : BAUDOUIN Customer

: 12 F 11 SRE, GE Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75) Rack travel in mm : 9.00...12.00

: 1- 12- 9- 5- 3- 8-Firing order

11-4-2-10-7-6

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 12.4...12.7

100 s: (12.1...12.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 325.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.3...1.8 100 s: (1.0...2.0)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.00...1.40 travel mm rpm : 10002nd speed

: 3.20...3.60 travel mm

rpm : 1500 3rd speed : 8.10...8.30 travel mm

rpm : 1800 4th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1700 Speed

Rack travel in mm : 5.00...8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed Aneroid pressure h: 900

: 124.0...127.0 Del.quantity 1000 : (121.5...129.5)

cm3 : 4.00 Spread

: (7.50) 1000

RATED SPEED

1st version Control lever position degrees: 51...59 Testina: 1st rack travel in: 10.00 rpm : 1540...1550 Speed 2nd rack travel in: 4.00 rpm : 1630...1660 Speed 4th rack travel in: 1750 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 18...26 Testina: : 100 Speed rpm Minimum rack trave: 8.50 rpm : 325 Rack travel in mm : 6.90...7.10 CONSTANT REGULATION Speed rpm : 300...400 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mgn hPa : 900 Pressure : 11.00...11.10 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.50...9.60 2nd pressure hPa : 400 Rack travel in m: 10.50...10.60 START CUT-OUT 1/min: 275 (295) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 73.0...77.0 1000 s: (70.5...79.5)

1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1540...1550 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY : 100 Speed rom LOW IDLE Speed : 325 rpm Rack travel in mm: 6.90...7.10 Del.quantity cm3/: 13.0...18.0 1000 s: (10.5...20.5) cm3 : 4.50Spread 1000 s: (7.50) Remarks:

APPLICATION

Navy

**BREAKAWAY** 

Note remarks

: MAN 21,0 d Test sheet : 02.01.90 Edition

Replaces

: ISO-4113 Test oil

: 0 401 840 769 Combination no.

Injection pump

Pump designation : PE12P12OA520/4LS3854

: 0 411 820 728 EP type number

Governor

Governor design. : RQ750PA933 : D 421 801 495 Governer no.

Customer-spec. information Customer : MAN

: D2842LE Engine

: 380.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 : (4.15...4.35) Prestroke mm

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-Firing order

4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 345 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.4...4.6

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 215.0...217.0 Del.quantity 1000 : (212.0...220.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.70 Speed rpm : 750...755 2nd rack travel in: 4.00

rpm : 786...799 Speed 4th rack travel in: 950

rpm : 0.00...1.00Speed

Remarks:

: MAN-NR. 2-7978

Note remarks

: MAN 21,0 d1 Test sheet Edition : 23.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 769A

Injection pump

: PE12P120A520/4LS3854 Pump designation

EP type number : 0 411 820 728

Governor

Governor design. : RQ750PA933 : 0 421 801 495 Governer no.

Cust. part no. : 2-7981

Customer-spec. information Customer : MAN

: D2842LE Engine

: 380.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

(4.15...4.35)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 25.0...25.2

100 s: (24.7...25.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.4...4.6 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 250.0...252.0 Del.quantity 1000 : (247.0...255.0)

: 5.00 cm3 Spread

: (9.00) 1000

RATED SPEED

1st version

Testina:

1st rack travel in: 12.00 rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 786...799 Speed 4th rack travel in: 950

rpm : 0.00...1.00Speed

STARTING FUEL DELIVERY
Del.quantity cm3/: 165.0...185.0
1000 s: (161.0...189.0)

Remarks:

APPLICATION

Generator set

Note remarks

: MB 11,8 a 1 Test sheet : 16.02.90 Edition : 11.3.88 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 194

Injection pump

Pump designation : PE6P100A720RS15 : 0 411 806 106 EP type number

Governor

Governor design. : RQ250/1100PA111DR

Governer no. : 0 421 803 045

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 355

1st version kW : 154.5 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1090 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.02nd speed

Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.50...16.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1090 Speed

: 100.0...102.0 Del.quantity

1000 : (98.0...104.0)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 11.00

rpm : 1135...1150 Speed

2nd rack travel in: 4.00 Speed rpm : 1210...1240 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 7.00 rpm : 250 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 385...425 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1090 Rack travel in m: 12.00...12.10 2nd speed rpm : 450 Rack travel in m: 12.60...12.70 3rd speed rpm : 700 Rack travel in m: 12.30...12.40 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 96.0...99.0 1000 s: (94.0...101.0) rpm : 450 Speed Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1135...1150 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Remarks:

Note remarks

: FIA 13,8 a : 01.02.90 Test sheet Edition Replaces : 10.2.89

: ISO-4113 Test oil

Combination no. : 0 401 846 225

Injection pump

Pump designation : PE6P120A720RS167 : 0 411 826 053 EP type number

Governor

Governor design. : RQ225/1100PA118 : 0 421 801 027 Governer no.

Customer-spec. information : IVECO-FIAT Customer

Engine : 221A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Openina** 

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm (1.95...2.15)

Rack travel in mm : 9.00...12.00

s 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 7.5...7.7
Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 170.0...172.0 1000 : (167.0...175.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 10.10

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 7.60

Speed rpm : 225 Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00 Speed rpm : 320...380

TORQUE CONTROL Dimension a mm

Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.10...11.20

2nd speed rpm : 600

Rack travel in m: 11.10...11.30

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : SCA 8,0 r Test sheet : 14.02,1990 Edition Replaces Test oil : TSO-4113 Combination no. : 0 401 846 351 Injection pump Pump designation : PE6P100A720RS332 Governor Governor design. : RQV200...1200PA168R Customer-spec. information Customer : SCANIA Engine : DS 8 TEST BENCH REQUIREMENTS Test oil : 35...45 inlet temp. °C Inlet press., bar: 1.5 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Prestroke mm : 2.5...2.6 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.5 (0.75)$ 

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 14.10 Del.quantity cm3/: 13.4...13.8 100 s: (-) cm3 : 0.5Spread 100 s: (-) rpm : 225 2nd speed Rack travel in mm: 6.00 Del.quantity cm3/ : 1.0...1.2 100 s: (-) cm3 : 0.15Spread 100 s: (-) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Anerotu p. \_\_\_ Del.quantity : 10-1 1000 : (-) Aneroid pressure h: 260 : 134.0...138.0 RATED SPEED 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 16.30 rpm : 1190...1210 Speed 2nd rack travel in: 10.95 rpm : 1285...1315 Speed 3rd rack travel in: 1.40...8.10 Speed rpm: 1385...1415 4th rack travel in: 1550 Speed rpm LOW IDLE 1 Control lever position degrees: 6...14 Testing: : 200 Speed rpm Minimum rack trave: 6.20 rpm : 300 Rack travel in mm : 3.70...5.90 Rack travel in mm : 2.85 : 400 Speed rom : 500 Speed rpm Maximum rack trave: 1.00 Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm

rpm : 500 hPa : 260 mm : 13.90...14.10 Pressure Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 12.00...12.20

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: ?

rpm : 1220 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190...240 1000 s: (-)

LOW IDLE

Speed rpm : 225 Del.quantity cm3/ : 11.0...13.0

1000 s: (-)

Remarks:

: MACK ENDT 475

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,8 L 1 Edition : 21.04.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 413 Injection pump Pump designation : PE6P110A720RS371-1 : 0 411 816 166 EP type number Governor Governor design. : RQV300...1100PA455R : 0 421 813 305 Governer no. Customer-spec. information Customer : DAIMLER-BENZ : 0M355A Engine 1st version kW : 206.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Openina ( : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 11.70...11.80 Del.quantity cm3/: 16.0...16.2 100 s: (15.7...16.5) cm3 : 0.4Spread 100 s: (0.8) 2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1100 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 700 Del.quantity : 160.0...162.0 1000 : (157.0...165.0) : 4.00 cm3 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 62...70

Testina:

Speed

1st rack travel in: 10.70

2nd rack travel in: 4.00

rpm : 1140...1150

rpm : 1225...1255 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 11...19 Testing: Speed : 100 rpm Minimum rack trave: 7.50 : 300 rpm Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00 Speed : 470...530 rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure : 11.70...11.80 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10 2nd pressure hPa : 390 Rack travel in m: 11.50...11.60 3rd pressure hPa : 350 Rack travel in m: 11.20...11.30 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 rpm Del.quantity cm3/: 156.0...160.0 1000 s: (153.0...163.0) cm3 : 6.00 Spread 1000 s: (9.00) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 6.00Spread 1000 s: (9.00)

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm: 1140...1150

STARTING FUEL DELIVERY

Speed rpm: 100
Del.quantity cm3/: 135.0...155.0
1000 s: (13.0...159.0)

Remarks:

Note remarks

Test sheet : DAF 11,6 u1 Edition : 09.09.88

: 5.84 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 461

Injection pump

Pump designation : PE6P110A720RS441 EP type number : 0 411 816 148

Governor

Governor design. : RQ225/1200PA617 : 0 421 801 157 Governer no.

Customer-spec. information : DAF Customer

Engine : DHS825

: 184.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

1st version

RATED SPEED

1st version

Del.quantity

Speed

Spread

Setting point:

Firing order

Tolerance + - °

BASIC SETTING

1st speed

Spread

2nd speed

Spread

Phasing

Speed rpm : 650 Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.20

rpm : 1235...1250 Speed

: 1-5-3-6-2-4

: 0-60-120-180-240-300

: 0.50 (0.75)

100 s: (13.4...14.1)

rpm: 1000

Rack travel in mm : 12.20...12.30

cm3 : 0.4

100 s: (0.7)

rpm : 225.0

cm3 : 0.4

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 1000

: 137.0...139.0

1000 : (134.5...141.5) : 4.00

: (7.50)

rpm : 650 Rack travel in mm : 15.20...16.40

100 s: (0.7)

100 s: (0.7...1.7)

Del.quantity cm3/: 13.7...13.9

Rack travel in mm: 5.5...5.7

Del.guantity cm3/: 1.0...1.5

GUIDE SLEEVE POSITION Control-lever position

Aneroid pressure h: 700

cm3

1000

2nd rack travel in: 4.00

rpm : 1310...1340 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 225 Rack travel in mm: 5.6

Testing: Speed rpm : 100 Minimum rack trave: 6.70 rpm : 225 Speed

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00 Speed rpm : 370...410

TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.20...12.30 2nd speed rpm : 1190 Rack travel in m: 12.10...12.30

Aneroid/Altitude Compensator Test

1st version Setting Speed rpm hPa : 700 Pressure

: 12.20...12.30 Rack travel mm

: 600

Measurement 1/min: 600 Speed

1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 360

Rack travel in m: 11.70...11.80

3rd pressure hPa : 290

Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: rpm\_ : 600 Speed Del.quantity cm3/: 92.0...94.0 1000 s: (89.5...96.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1235...1250

## STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 245.0...285.0 1000 s: (241.0...289.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 10.0...15.0
1000 s: (7.5...17.5)

cm3 : 4.50 Spread 1000 s: (7.50)

Remarks:

:

Note remarks

Test sheet : DAF 8,3 o 1
Edition : 04.05.90
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 401 846 471

Injection pump

Pump designation : PE6P100A720RS447 EP type number : 0 411 806 191

Governor

Governor design. : RQ225/1200PA617 Governer no. : 0 421 801 157

Customer—spec. information Customer : DAF

Engine : DHT 825

1st version kW : 162.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.30 (0.75)$ 

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm: 225.0
Rack travel in mm: 5.3...5.5
Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000 Aneroid pressure h: 700

Del.quantity : 118.5...120.5 1000 : (116.5...122.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point: Speed rpm : 650 Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1 Setting point w/out bumper spring rom : 225 Rack travel in mm: 5.4 Testing: : 100 Speed rpm Minimum rack trave: 6.00 : 225 rpm Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 : 365...405 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.60...11.70 2nd speed rpm : 1200 Rack travel in m: 11.30...11.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure : 11.40...11.50 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 315 Rack travel in m: 11.10...11.20 3rd pressure hPa : 270 Rack travel in m: 10.50...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -: 600 Speed rpm Del.quantity cm3/: 93.5...95.5 1000 s: (91.5...97.5) **BREAKAWAY** 1st version 1mm rack travel less than

full load rack tr: 10.40 rpm : 1235...1250 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 225 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

See VDT-I-420/115

**GO6** 

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : ENA 11,9 h Test sheet : 13.12.89 Edition : 2.10.89 Replaces : ISO-4113 : 0-60-120-180-240-300 Phasing Test oil : 0 401 846 482 Tolerance + - ° : 0.50 (0.75) Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PE6P120A320RS257 : 0 411 826 075 BASIC SETTING EP type number Governor Governor design. : RQV250...1100PA680 rpm: 1080 1st speed : 0 421 813 374 Governer no. Rack travel in mm : 10.00...10.10 Customer-spec. information Del.quantity cm3/: 18.8...19.0 Customer : ENASA 100 s: (18.5...19.3) Engine : 96 T1 AX, BX : 228.0 Spread cm3 : 0.51st version kW : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Rack travel in mm : 5.4...5.6 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp. °C : 38...42 100 s: (1.4...2.6) Overflow valve Spread cm3 : 0.8100 s: (1.2) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 250 1st speed : 1.00...1.40 **Opening** travel mm : 207...210 2nd speed rpm : 350 pressure, bar 1.70...2.30 travel mm Orifice plate 3rd speed rom : 650 diameter mm : 0,8 travel mm 4th speed rpm travel mm : 1 680 750 067 Test Lines 5th speed rpm travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness : 6.00x1.50x1000 Control-lever position x Length mm

3rd speed rpm: 650
travel mm: 4.00..4.60
4th speed rpm: 1145
travel mm: 8.30..8.50
5th speed rpm: 1225
travel mm: 9.20..9.60

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm: 1130
Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm: 1080
Aneroid pressure h: 900

(A) Injection pump setting values

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses

Del.quantity : 188.0...190.0 1000 : (185.0...193.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 103...111

Testing:

1st rack travel in: 9.00

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1320

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 72...80

Testing:

Speed rpm : 100 Minimum rack trave: 7.00 rom

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 250...380 Speed

TORQUE CONTROL

: 0.50 Dimension a mm

Torque control curve - 1st version

rpm : 1080 1st speed

Rack travel in m: 10.00...10.10

2nd speed rpm : 650

Rack travel in m: 10.50...10.70 d speed rpm : 850

3rd speed rpm

Rack travel in m: 10.20...10.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 10.10...10.30 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 370

Rack travel in m: 9.80...9.90

3rd pressure hPa : 290

Rack travel in m: 9.20...9.40

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 650 Del.quantity cm3/: 173.0...179.0

1000 s: (170.0...182.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.00

rpm : 1140...1150 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 5.20 rpm : 600...0 Speed

Rack travel in mm : 5.40

: 600...0 Speed rom

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

: RVI 9,8 b 4 Test sheet Edition : 01.02.90 : 15.8.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 497

Injection pump

Pump designation : PE6P120A320RS438-1 EP type number : 0 411 826 133

Governor

Governor design. : RQV275...1200PA648-2

: 0 421 813 490 Governer no.

Customer-spec. information Customer : RVT

: MIDSO62030 Engine

: 150.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 13.3...13.5

100 s: (13.0...13.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275 : 1.20...1.40 travel mm

rpm : 450 2nd speed travel mm : 3.30...4.00

: 850 3rd speed rpm

: 5.90...6.20 travel mm

: 1200 4th speed rpm

: 8.20...8.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 133.0...135.0 Del.quantity

1000 : (130.0...138.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 9.20

Speed rpm: 1265...1275 2nd rack travel in: 4.00

rpm : 1355...1385 Speed

4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 64...72

Testing:

rpm : 200 Speed Minimum rack trave: 8.80 rpm : 275 Speed

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 275...360 Speed

START CUT-OUT

1/min: 1295 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750Speed

Del.quantity cm3/: 116.0...122.0 1000 s: (113.0...125.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: -1.00

rpm : 1265...1275 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 105.0...125.0 1000 s: (101.0...129.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0)

Spread

cm3 : 8.00 1000 s: (12.00)

Remarks:

Start-of-delivery mark at the "INJ"

marking

G10

Note remarks

: RVI 8,8 L : 01.02.90 Test sheet Edition Replaces : 15.8.89 : ISO-4113 Test oil

Combination no. : 0 401 846 499

Injection pump

Pump designation : PE6P12OA32ORS474 EP type number : 0 411 826 134

Governor

Governor design. : RQV275...1200PA425-3

Governer no. : 0 421 813 441

Customer-spec. information Customer : RVI

Engine : MIDSO62030

: 168.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed : 1.20...1.40 travel mm

2nd speed rpm : 400

: 2.90...3.40 travel mm

rpm : 900 3rd speed

: 5.80...6.00 travel mm

rpm : 1200 4th speed

: 7.80...8.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1250 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 700

: 151.0...153.0 Del.quantity

1000 : (148.0...156.6)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 10.90

rpm : 1285...1295 Speed

2nd rack travel in: 4.00

Speed rpm: 1400...1430 4th rack travel in: 1500

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 66...74

Testing:

rpm : 200 Speed Minimum rack trave: 9.60 : 275 Speed rpm

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 275...360

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed man hPa : 700 Pressure

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 10.60...10.80

2nd pressure hPa : 195

Rack travel in m: 11.60...11.70 3rd pressure hPa : 175

Rack travel in m: 11.10....11.30

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750 Speed

Del.quantity cm3/: 139.0...145.0 1000 s: (136.0...148.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 92.0...94.0 1000 s: (89.0...97.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: -1.00

rpm : 1285...1295 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 105.0...125.0 1000 s: (101.0...129.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 15.0...21.0 1000 s: (12.0...24.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

Start-of-delivery mark at the "INJ"

marking

Note remarks

Test sheet Edition : VOL 7,1 d : 16.02.90 : 9.11.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 505

Injection pump

Pump designation : PE6P110A320RS483 : 0 411 816 159 EP type number

Governor

Governor design. : RQV250...1200PA918

: 0 421 813 772 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD71F

1st version kW : 162.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Openina** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm:7001st speed

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 12.7...12.9

100 s: (12.4...13.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.3)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 250 rpm : 1.10...1.30 travel mm

380 2nd speed rpm

2.30...2.60 travel mm

: 500 3rd speed rpm

: 2.90...3.30 travel mm 4th speed : 1260 rpm

: 7.70...7.90 travel mm

5th speed 1400 rpm

travel mm : 9.00...9.30

GUIDE SLEEVE POSITION Control-lever position

Dearee: -1

rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 127.0...132.0)

Spread cm3 : 4.00

1000 : (7.50)

### RATED SPEED

1st version Control lever

position degrees: 109...117

Testing:

1st rack travel in: 11.30

Speed rpm: 1240...1250 2nd rack travel in: 4.00

Speed rpm: 1380...1410 4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 56...64

Testing:

: 100 Speed rom Minimum rack trave: 6.80 rpm

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm Pressure hPa : 900

Rack travel mm : 12.30...12.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.30

2nd pressure hPa : 570
Rack travel in m: 12.10...12.20
3rd pressure hPa : 270

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 85.0...88.0 1000 s: (82.0...91.0)

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

#### LOW IDLE

Speed rpm: 250
Rack travel in mm: 5.30...5.50
Del.quantity cm3/: 16.0...20.0
1000 s: (13.0...23.0)

cm3 : 3.00Spread

1000 s: (6.00)

### Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: VOL 7,1 d 1 : 05.03.90 Test sheet Edition Replaces : 9.11.89 : ISO-4113 Test oil

Combination no. : 0 401 846 506

Injection pump

Pump designation : PE6P110A320RS483-1 : 0 411 816 160 EP type number

Governor

Governor design. : RQV250...1200PA918-1

: 0 421 813 773 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD71FS

1st version kW : 180.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.3)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm rpm : 380 2nd speed : 2.30...2.60 travel mm

: 500 3rd speed rpm

2.90...3.30 travel mm : 1260 4th speed rpm

: 7.70...7.90 travel mm

5th speed : 1400 rpm : 9.00...9.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200

Del.quantity : 142.0...144.0

1000 : (139.0...147.0)

Spread cm3 : 4.00 1000 : (7.50)RATED SPEED 1st version Control lever position degrees: 109...117 Testina: 1st rack travel in: 12.10 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 : 1385...1415 rpm Speed 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 56...64 Testing: Speed rpm : 100 Minimum rack trave: 6.80 : 250 rpm Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 250...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1200 Pressure : 13.10...13.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.20...10.30 2nd pressure hPa : 710 Rack travel in m: 12.20...12.30 3rd pressure hPa : 380 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1000 Speed Del.quantity cm3/: 137.0...143.0 1000 s: (135.0...145.0) Aneroid pressure h: -Speed : 700 rom

Del.quantity cm3/: 85.0...88.0 1000 s: (82.0...91.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1240...1250

STARTING FUEL DELIVERY

LOW IDLE

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

Note remarks

: DAF 11.6 x2 : 16.02.90 Test sheet Edition : 10.4.87 Replaces

: ISO-4113 Test oil

: 0 401 846 540 Combination no.

Injection pump

Pump designation : PE6P110A320RS407-1

: LT 195

EP type number : 0 411 816 147

Governor

Governor design. : RQ275/1000PA861 : 0 421 801 397 Governer no.

Customer-spec. information Customer : DAF

: 195.0 1st version kW

: 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

Engine

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.80...12.90

Del.guantity cm3/: 15.3...15.5

100 s: (15.0...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/: 1.4...1.9

100 s: (1.1...2.1)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 700

Del.quantity : 753.0...157.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16.0

Testing:

1st rack travel in: 11.40

rpm : 1030...1045 Speed

2nd rack travel in: 4.00

Speed rpm : 1100...1130 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 7.3

Testing:

rpm : 100 Speed Minimum rack trave: 8.40 : 275 Speed rpm

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.50 Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 600

Rack travel in m: 13.00...13.10

2nd speed rpm: 980 Rack travel in m: 12.40...12.60 3rd speed rpm: 900

Rack travel in m: 12.50...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed man hPa : 700 Pressure

: 12.80...12.90 Rack travel mm

Measurement

Speed  $1/\min : 600$ 

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 340 Rack travel in m: 12.50...12.60

3rd pressure hPa : 310

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 980 Speed

Del.quantity cm3/: 145.5...149.5

1000 s: (142.5...152.5)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 130.0...132.0

1000 s: (127.5...134.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.40

rpm : 1030...1045 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 220.0...260.0 1000 s: (216.0...264.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 7.20...7.40

Del.quantity cm3/: 14.0...19.0 1000 s: (11.5...21.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : ENA 10,1 a : 13.12.89 Edition : 25.3.88 Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 544

Injection pump

: PE6P100A820LS130 Pump designation : 0 411 806 179 EP type number

Governor

Governor design. : RQ250/1050PA627-1

: 0 421 801 407 Governer no.

Customer-spec. information Customer : ENASA

: 95 A1 BZ, Engine

: 125.0 1st version kW

Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75)Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 10301st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.02nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030Speed

: 114.0...116.0 Del.quantity : (112.0...118.0) : 3.50 1000

cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 10.80 Speed rpm : 1095...1110 2nd rack travel in: 4.00

: 1140...1170 Speed rpm

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.0

Testing:

: 100 Speed rpm Minimum rack trave: 7.50
Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...390

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.80

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 118.0...133.0 1000 s: (114.0...137.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

Test sheet : ENA 10,1 b : 05.03.90 Edition : 20.10.89 Replaces Test oil : TSO-4113

Combination no. : 0 401 846 546

Injection pump

Pump designation : PE6P100A820LS130 : 0 411 806 179 EP type number

Governor

Governor design. : RQV250...1050PA807-1

: D 421 813 665 Governer no.

Customer-spec. information : ENASA Customer

: 95 A1 BX, Engine

: 125.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.40 travel mm

rpm : 350 2nd speed

: 1.90...2.50 travel mm

3rd speed rpm : 700

: 4.50...5.10 travel mm rpm : 1095 4th speed

: 8.00...8.20 travel mm

: 1185 5th speed rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030Speed

: 114.0...116.0 Del.quantity

: (112.0...118.0) 1000

3.50 Spread cm3

: (6.00) 1000

# RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 10.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 80...88

Testing:

Speed : 100 rpm Minimum rack trave: 7.50

Speed rpm : 250 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...400 Speed

START CUT-OUT

1/min: 170 (190) Speed

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0

1000 s: (256.0...284.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

Test sheet : ENA 10.1 c : 13.12.89 Edition : 20.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 547

Injection bump

: PE6P110A820LS513 Pump designation EP type number : 0 411 816 174

Governor

Governor design. : RQV250...1000PA811

: 0 421 813 556 Governer no.

Customer-spec. information Customer : ENASA

: 95 R1 AX Engine

1st version kW : 184.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm : (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - °  $\pm 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 980 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 17.6...17.8

100 s: (17.3...18.1)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.8...2.3

100 s: (1.5...2.5)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.40 travel mm

2nd speed : 400 rpm 2.20...2.80 travel mm

3rd speed : 650 rpm

4.50...5.10 travel mm

1050 4th speed rpm

: 8.50...8.70 travel mm

5th speed : 1140 rpm

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Aneroid pressure h: 900

Del.quantity : 1/0.0...181.0)

cm3Spread

: 4.00 1000 : (7.50)

#### RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 11.80 Speed rpm : 1040...1050

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 81...89

Testing:

: 100 Speed rpm Minimum rack trave: 8.20 rpm

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 250...480 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

: 980 1st speed rpm

Rack travel in m: 12.80...12.90

2nd speed rpm : 700

Rack travel in m: 13.30...13.50

3rd speed rpm : 850

Rack travel in m: 13.00...13.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 900 Pressure

: 13.00...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.20

2nd pressure hPa : 440

Rack travel in m: 12.50...12.60

3rd pressure hPa : 290

Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 600 Speed

Del.quantity cm3/: 178.0...182.0 1000 s: (175.0...185.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : ENA 10.1 d
Edition : 13.12.89
Replaces : 20.10.89
Test oil : ISO-4113

Combination no. : 0 401 846 549

Injection pump

Pump designation : PE6P100A820LS503 EP type number : 0 411 806 197

Governor

Governor design. : RQV250...1000PA811

Governer no. : 0 421 813 556

Cust. part no. : 181333

Customer-spec. information Customer : ENASA

Engine : 95 T1 AX,BX

1st version kW : 165.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.7...7.9

Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed rpm: 1140

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 980 Aneroid pressure h: 900

: 165.0...167.0 Del.quantity 1000 : (163.0...169.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 121...129 Testing: 1st rack travel in: 13.20 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 Speed rpm : 1140...1170 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 81...89 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rom Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 250...450 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 14.20...14.30 : 550 2nd speed rom Rack travel in m: 15.00...15.30 3rd speed rpm : 750 Rack travel in m: 14.80...15.00 4th speed rpm : 850 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version

Setting rpm : 500 hPa : 900 Speed rpm Pressure : 14.70...14.90 Rack travel mm Measurement Speed  $1/\min : 500$ 

1st pressure hPa :-Rack travel in m: 12.90...13.30 2nd pressure hPa : 400

Rack travel in m: 14.10...14.20 3rd pressure hPa : 300 Rack travel in m: 13.40...13.60

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 Speed rpm : 700 Del.quantity cm3/: 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.20 peed rpm : 1040...1050

Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: ENA 11,9 f Test sheet : 13.12.89 Edition : 19.5.88 Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 551

Injection pump

Pump designation: PE6P110A320RS263-1

: D 411 816 175 EP type number

Governor

Governor design. : RQ250/1000PA218-2

: 0 421 801 411 Governer no.

Customer-spec. information

: ENASA Customer

: 96 T4 AY Engine

: 176.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 160.0...162.0 Del.quantity 1000 : (157.0...165.0)

cm3 : 4.00

Spread 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

rpm : 1045...1060 Speed

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.0

Testing:

: 100 Speed rpm Minimum rack trave: 7.50 : 250

Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00

Speed rpm : 350...390

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 143.0...163.0

1000 s: (139.0...167.0)

Remarks:

APPLICATION

**Omnibus** 

Note remarks

Test sheet : ENA 10,1 e Edition : 13.12.89 : 2.10.89 Replaces Test oil : ISO-4113

: 0 401 846 552 Combination no.

Injection pump

Pump designation : PE6P100A820LS503-1 : 0 411 806 198 EP type number

Governor

Governor design: : RQ250/1000PA352-1

: 0 421 801 412 Governer no.

Customer-spec. information Customer : FNASA

: 95 TEDY Engine

: 155.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.85...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 15.5...15.7

100 s: (15.3...15.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.8...8.0 Del.guantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed Aneroid pressure h: 900

: 155.0...157.0 Del.quantity 1000 : (153.0...159.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 16.6

Testing:

1st rack travel in: 12.70

rpm : 1045...1060 Speed 2nd rack travel in: 4.00

rpm : 1100...1130 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.0

Testing:

rpm : 100 Speed Minimum rack trave: 7.50

Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00 : 350...390 Speed rom

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

rpm : 980 1st speed

Rack travel in m: 13.70...13.80

rom : 700 2nd speed

Rack travel in m: 14.40...14.80

3rd speed rpm : 825

Rack travel in m: 13.90...14.30

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed mar hPa : 900 Pressure

: 14.10...14.30 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20

3rd pressure hPa : 300

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 700 Del.quantity cm3/: 159.0...163.0 1000 s: (157.0...165.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.70

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 bel.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: RVI 9,8 h Test sheet Edition : 05.03.90 : 1.12.89 Replaces : ISO-4113 Test oil

: 0 401 846 561 Combination no.

Injection pump

Pump designation : PE6P120A320RS519 : 0 411 826 145

EP type number

Governor Governor design. : RQ275/1050PA899

: 0 421 801 460 Governer no.

Customer-spec. information Customer : RVI

: MIHS 06.20.45 Enaine

: 185.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.02nd speed

Rack travel in mm : 5.6...6.0 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700

: 167.0...169.0 Del.quantity 1000 : (164.0...172.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.10

rpm : 1110...1125 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring : 275 rom Rack travel in mm: 5.8 Testing: : 200 Speed rpm Minimum rack trave: 7.40 : 275 rom Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.10 rpm : 345...385 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 700 Pressure Rack travel mm : 11.10...11.20 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 260 Rack travel in m: 10.60...10.70 3rd pressure hPa : 220 Rack travel in m: 10.00...10.20 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 700 Del.quantity cm3/ : 159.0...165.0 1000 s: (156.0...168.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 105.0...107.0 1000 s: (102.0...110.0)

1mm rack travel less than

full load rack tr: -1.00 Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 145.0...175.0 1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.60...6.00 Del.quantity cm3/ : 13.0...19.0

1000 s: (10.0...22.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

**APPLICATION** 

Omnibus

H04

**BREAKAWAY** 

1st version

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : ENA 11,9 a3 : 23.03.90 Edition : 13.10.89 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 0 401 846 563 Tolerance + - ° : 0.50 (0.75) Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PE6P120A320RS257 : 0 411 826 075 EP type number BASIC SETTING Governor Governor design. : RQV250...1050PA808-3 1st speed rom: 650 : 0 421 813 812 Governer no. Rack travel in mm : 10.40...10.50 Customer-spec. information Del.quantity cm3/: 17.9...18.1 Customer : ENASA 100 s: (17.6...18.4) : 96 T3 CX Engine : 228.0 cm3 : 0.51st version kW Spread : 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.02nd speed Rack travel in mm: 5.6...5.8 Test oil Del.guantity cm3/: 1.7...2.3 inlet temp. °C : 38...42 100 s: (1.4...2.6) cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 250 1st speed : 1.00...1.40 travel mm Opening | rpm : 350 : 207...210 2nd speed pressure, bar : 1.90...2.50 travel mm rpm : 700 Orifice plate 3rd speed travel mm : 4.50...5.10 diameter mm : 0,8 rpm : 1095 4th speed : 8.00...8.20 travel mm rpm : 1185 Test lines : 1 680 750 067 5th speed travel mm : 9.00...9.40 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 Control-lever position x Length mm Degree: -1 rpm : 1110 (A) Injection pump setting values Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Aneroid pressure h: 900

Speed

rpm : 650

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 179.0...181.0 : (176.0...184.0) Del.quantity

1000

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 9.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

rpm : 100 Speed Minimum rack trave: 7.20 : 250 rpm

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 10.40...10.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.60...8.00

2nd pressure hPa : 650

Rack travel in m: 10.00...10.10 3rd pressure hPa : 380

Rack travel in m: 8.40...8.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1030

Del.quantity cm3/: 191.0...197.0

1000 s: (188.0...200.0)

Ameroid pressure h: -

Speed rpm: 500
Del.quantity cm3/: 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

**APPLICATION** 

Omnibus

: 2.80...2.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : ENA 11,9 a4 Test sheet : 30.03.90 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 401 846 563A Time to cyl. no. : 1 Injection pump Pump designation: PE6P120A320RS257 EP type number : 0 411 826 075 BASIC SETTING Governor rpm: 600 Governor design. : RQV250...1050PA808-3 1st speed : 0 421 813 812 Governer no. Rack travel in mm : 10.60...10.70 Customer-spec. information Del.quantity cm3/: 17.7...17.9 : ENASA Customer 100 s: (17.4...18.2) : 96 T1 DW, EW Engine : 206.0 cm3 : 0.51st version kW Spread Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm: 5.6...5.8 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp. °C : 38...42 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 250 1st speed : 1.00...1.40 travel mm Openina : 207...210 2nd speed rpm : 350 pressure, bar : 1.90...2.50 travel mm rpm : 700 Orifice plate 3rd speed : 0,8 travel mm : 4.50...5.10 diameter mm : 1095 4th speed rpm : 8.00...8.20 travel mm rpm : 1185 5th speed Test lines : 1 680 750 067 : 9.00...9.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X1.50X1000 x Length mm Control-lever position Degree: -1 rpm : 1110 (A) Injection pump setting values Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

Aneroid pressure h: 900

rpm : 600

Speed

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 177.0...179.0 Del.quantity

1000 : (174.0...182.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 9.60

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1330

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed rpm : 100 Minimum rack trave: 7.20 rpm

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm : 900 Pressure hPa

: 10.60...10.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 400

Rack travel in m: 10.10...10.20

3rd pressure hPa : 230

Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm\_ : 1080

Del.quantity cm3/: 197.0...203.0

1000 s: (194.0...206.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 130.0...150.0

1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

**H08** 

: 2.80...2.90 : (2.75...2.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : ENA 11,9 a5 Test sheet : 30.03.90 Edition Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Tolerance + - ° : 0.50 (0.75) : 0 401 846 563E Combination no. Time to cyl. no. : 1 Injection pump Pump designation : PE6P12OA32ORS257 : 0 411 826 075 BASIC SETTING EP type number Governor Governor design. : RQV250...1050PA808-3 1st speed rpm: 650 : 0 421 813 812 Governer no. Rack travel in mm : 10.40...10.50 Customer-spec. information Del.quantity cm3/: 17.9...18.1 Customer : ENASA 100 s: (17.6...18.4) : 96 T1 CV Engine 1st version kW : 228.0 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.7...2.3 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.6) Overflow valve cm3 : 0.8Spread 100 s: (1.2) : 1 417 413 025 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 250 1st speed : 1.00...1.40 travel mm Opening rpm : 350 : 207...210 2nd speed pressure, bar travel mm 1.90...2.50 rpm : 700 Orifice plate 3rd speed : 4.50...5.10 diameter mm : 0,8 travel mm rpm : 1095 4th speed : 8.00...8.20 travel mm rpm : 1185 : 1 680 750 067 Test Lines 5th speed : 9.00...9.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 Control-lever position x Length mm Degree: -1 rpm : 1110 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values 1st version BEGINNING OF DELIVERY Test pressure, bar: 25...27 Speed

rpm : 650

Aneroid pressure h: 900

Del.quantity : 179.0...181.0 1000 : (176.0...184.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 9.40

Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed : 100 rpm Minimum rack trave: 7.20 rpm

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 900 Pressure

: 10.40...10.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 7.60...8.00

2nd pressure hPa : 650

Rack travel in m: 10.00...10.10

3rd pressure hPa : 380

Rack travel in m: 8.40...8.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1030 Speed

Del.quantity cm3/: 191.0...197.0 1000 s: (188.0...200.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 104.0...106.0

1000 s: (101.0...109.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

**APPLICATION** 

**Omnibus** 

Note remarks

Test sheet : ENA 10,1 d : 30.03.90 Edition : 20.10.89 Replaces

: ISO-4113 Test oil

: 0 401 846 565 Combination no.

Injection pump

Pump designation : PE6P110A820LS513 : 0 411 816 174 EP type number

Governor

Governor design: RQ250/1000PA352-1

: 0 421 801 412 Governer no.

Customer-spec. information : ENASA Customer

Engine : 95 R3AZ,R1AZ

: 184.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 17.9...18.1

100 s: (17.6...18.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600Speed Aneroid pressure h: 900

Del.quantity : 1/9.0...184.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.6

Testing:

1st rack travel in: 11.80

rpm : 1045...1060 Speed

2nd rack travel in: 4.00

: 1095...1125 Speed rpm

4th rack travel in: 1200

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.0

Testing:

Speed : 100 rom Minimum rack trave: 7.50 : 250 Speed rpm

Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 Speed rpm: 350...390

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 13.30...13.70

2nd speed rpm : 900 Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm

hPa : 900 Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.20

2nd pressure hPa : 450

Rack travel in m: 12.60...12.70

3rd pressure hPa : 300

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 900 Speed

Del.quantity cm3/: 175.0...179.0 1000 s: (173.0...181.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0

1000 s: (129.0...137.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet Edition

: SCA 11,0r12 : 16.02.90

Replaces

Test oil

: ISO-4113

Combination no. : 0 401 846 734

Injection pump

Pump designation : PE6P110A720RS3040

EP type number

: D 411 816 713

Governor

Governor design. : RQV200...1000PA555

Governer no.

: 0 421 813 280

Customer-spec. information Customer

: SCANTA

Engine

: DS11 14

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.30...3.40

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5- 3-6-

: 0-60-120-180-240-300 Phasing

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 13.60...13.70

Del.guantity cm3/: 17.5...17.7

100 s: (17.3...17.9)

Spread

cm3 : 0.6

100 s: (0.8)

rpm : 225.0 2nd speed

Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 1.7...2.1

100 s: (-)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1050 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600

Aneroid pressure h: 700

Del.quantity

: 175.0...177.0 1000 : (173.0...179.0)

: 6.00 cm3

1000 : (8.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 12.60

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 5...13

Testing:

Speed rpm : 100 Minimum rack trave: 5.90 Speed

: 225 rpm

Rack travel in mm : 4.40...4.60

Rack travel in mm: 2.00

: 320...380 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 700 Pressure

: 13.60...13.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.60...11.80

2nd pressure hPa : 410

Rack travel in m: 13.20...13.30 3rd pressure hPa : 260

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 1000 Speed

Del.quantity cm3/: 175.0...180.0 1000 s: (172.5...182.5)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 127.0...131.0 1000 s: (125.0...133.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.60

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 Rack travel in mm : 20.00...21.00

LOW IDLE

H14

rpm : 225 Speed

Rack travel in mm : 4.40...4.60 Del.quantity cm3/: 17.0...21.0 Spread cm3: 2.00 1000 s: (4.00)

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Aug. 30, 1984

Start of delivery - engine: 20° before

Firing sequence of engine:

1-5-3-6-2-4.

Note remarks

: MB 11,0 e 5 : 05.03.90 Test sheet Edition : 12.12.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 818

Injection pump

Pump designation : PE6P12OA32OLS3810-10

EP type number : 0 411 826 734

Governor

Governor design. : RQV350...1150PA720-1 Governer no. : 0 421 813 539

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M421A Enaine

1st version kW : 184.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

: 0-45-120-165-240-285 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 10.70...10.80

Del.guantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1250 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 700

: 158.0...160.0 Del.quantity

1000 : (155.0...163.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.70 rpm : 1175...1185 Speed 2nd rack travel in: 4.00 Speed rpm: 1260...1290 4th rack travel in: 1360 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 62...70 Testing: Speed rpm : 100 Minimum rack trave: 6.70 rpm : 350 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 350...500 TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 10.70...10.80 2nd speed rpm : 850 Rack travel in m: 11.00...11.20 : 950 3rd speed rpm Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure : 10.30...10.60 Rack travel mm Measurement Speed 1/min : 500 1st pressure hPa : 425 Rack travel in m: 10.50...10.60 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Del.quantity cm3/: 165.0...171.0 1000 s: (162.0...174.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 700

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1175...1185

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

\* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

Test sheet : MB 11,0 e12 Edition : 30.03.90

Replaces

: ISO-4113 Test oil

: 0 401 846 818 Combination no.

Injection pump

Pump designation : PE6P120A320LS3810-10

EP type number : 0 411 826 734

Governor

Governor design. : RQV350...1150PA720-2

: 0 421 813 620 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

: CM421A Engine

: 184.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

: 0-45-120-165-240-285 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 1250 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 700

Del.quantity : 158.0...163.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.70 rpm : 1175...1185 Speed 2nd rack travel in: 4.00 rpm : 1260...1290 Speed 4th rack travel in: 1360 rpm : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 62...70 Testina: Speed : 100 rpm Minimum rack trave: 6.70 rpm : 350 Speed Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 350...500 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version st speed rpm : 1150 Rack travel in m: 10.70...10.80 1st speed : 850 2nd speed rpm Rack travel in m: 11.00...11.20 3rd speed rpm : 950 Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm Pressure hPa : 10.30...10.40 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : 425 Rack travel in m: 10.50...10.60 START CUT-OUT Speed 1/min: 270 (290) FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 700 : 1150 Speed rpm Del.quantity cm3/: 128.0...131.0 \* 1000 s: (125.0...134.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 141.0...143.0 1000 s: (138.0...146.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1175...1185 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Remarks: \* = Set at reduced-delivery stop. Adjust stop lever to 0.5...1.0 mm before stop.

Spread

Aneroid pressure h: 700

Speed rpm : 600 Del.quantity cm3/: 165.0...171.0

1000 s: (12.0)

cm3

1000 s: (162.0...174.0) : 8.00

: 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks : 0-60-120-180-240-300 : ENA 11.9 d Phasing Test sheet Edition : 05.03.90 : 13.12.89 Tolerance + - ° : 0.50 (0.75) Replaces : ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 0 401 846 862 BASIC SETTING Injection pump Pump designation : PE6P110A320RS3201 1st speed rpm : 1030EP type number : D 411 816 753 Governor Rack travel in mm : 12.10...12.20 Governor design. : RQ250/1050PA218-1 : 0 421 801 406 Del.guantity cm3/: 12.6...12.8 Governer no. 100 s: (12.3...13.1) Customer-spec. information Customer : ENASA cm3 : 0.4Spread : 96 A4 AU Engine 100 s: (0.7) : 150.0 1st version kW rpm : 250.0 : 2100 Rated speed 2nd speed Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.7...2.3 TEST BENCH REQUIREMENTS 100 s: (1.4...2.6) Spread cm3 : 0.4Test oil inlet temp. °C 100 s: (0.7) : 38...42 GUIDE SLEEVE POSITION Overflow valve : 1 417 413 025 Control-lever position Degree: -1 rpm : 600Inlet press., bar: 1.50 Speed Rack travel in mm: 15.60...16.40 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly 1st version Opening rpm : 1030 : 172...175 Speed pressure, bar : 126.0...128.0 Del.quantity 1000 : (123.0...131.0) : 4.00 Test lines : 1 680 750 015 Spread cm3 1000 : (7.50) Outside diameter RATED SPEED

1st version

Speed

Testing:

Speed

Speed

Setting point:

: 600

rpm : 1095...1110

rpm : 1140...1170

rpm Rack travel in mm: 16.0

1st rack travel in: 11.10

2nd rack travel in: 4.00

4th rack travel in: 1250

x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm : (3.15...3.25) Rack travel in mm : 9.00...12.00

H19

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 6.0

Testing:

Speed rpm Minimum rack trave: 7.50

Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 290...330

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.10

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 143.0...163.0 1000 s: (139.0...167.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Note remarks

Test sheet : VOL 10,0 w : 16.02.90 Edition : 24.6.88 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 869

Injection pump

Pump designation : PE6P120A320RS3118 EP type number : 0 411 826 726

Governor

Governor design. : RQV250...1100PA649-1

: 0 421 813 675 Governer no.

Customer-spec. information Customer : VOLVO

Engine : THD 102 KD

: 250.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70

: (2.55...2.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.02nd speed Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 2.7...3.3

100 s: (2.4...3.6)

cm3 : 0.5 Spread 100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.30 travel mm

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

: 6.30...6.70 rpm : 950 travel mm

4th speed

: 6.30...6.70 travel mm rpm : 1100 5th speed

: 7.00...7.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200 Del.quantity : 222.0...224.0

1000 : (219.0...227.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 112...120

Testing:

1st rack travel in: 11.70

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 63...71

Testina:

rpm Speed : 100 Minimum rack trave: 5.90 Speed : 250 rpm

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

rpm : 250...420 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 12.70...12.80

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.50

2nd pressure hPa : 700 Rack travel in m: 12.50...12.60

3rd pressure hPa : 120

Rack travel in m: 9.00...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -: 700 rpm

Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1130...1140

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 230.0...270.0

1000 s: (225.0...275.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 27.0...33.0 1000 s: (24.0...36.0) Spread cm3 : 5.00 1000 s: (7.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

**APPLICATION** 

Omnibus

Note remarks

Test sheet

: UNI 13,8 c1

Edition Replaces

: 12.04.90 : 29.3.89

Test oil

: ISO-4113

Combination no.

: 0 401 846 879

Injection pump

Pump designation : PE6P120A720RS3192

EP type number

: 0 411 826 761

Governor

Governor design. : RQV300...900PA857-1

Governer no.

: 0 421 813 683

Customer-spec. information Customer

: IVECO-UNIC

Engine

: 8210.42.101

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm : 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

Prestroke mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.40...3.50

: (3.35...3.55)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 23.9...24.1

100 s: (23.6...24.4)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 300.0

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.8...2.4

100 s: (1.5...2.7)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

: 0.70...0.90 travel mm

: 550 2nd speed rpm

: 4.00...4.60 travel mm

rpm : 800 3rd speed

: 6.60...6.90 travel mm

rpm : 900 4th speed

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 950 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 900

: 239.0...241.0 Del.quantity

: (236.0...244.0)

1000

Spread

: 5.00 cm3

1000 : (9.00)

H23

### RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 12.10 Speed rpm : 940...950 2nd rack travel in: 4.00

rpm : 1060...1090 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 rpm : 300

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 370...490 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm

hPa : 900 Pressure

: 13.20...13.30 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 520 Rack travel in m: 12.20...12.30

3rd pressure hPa : 330

Rack travel in m: 9.80...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 500 Speed

Del.quantity cm3/: 232.0...238.0 1000 s: (229.0...241.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 108.0...110.0

1000 s: (105.0...113.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 940...950 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 235.0...265.0 1000 s: (231.0...269.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 18.0...24.0 1000 s: (15.0...27.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: PEN 12,2 a1 Test sheet Edition : 15.03.90

Replaces

Test oil : ISO-4113

: D 401 846 882A Combination no.

Injection pump

Pump designation : PE6P120A320RS3206-1

: 0 411 826 775 EP type number

Governor

Governor design. : RQ750PA783-1 : 0 421 801 432 Governer no.

Customer-spec. information Customer : PENTA

: TAMD 122 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening 1 contract 1 c

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 29.7...29.9

100 s: (29.4...30.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 297.0...299.0 Del.quantity 1000 : (294.0...302.0)

: 5.00 : (9.00) Spread cm3

1000

RATED SPEED

1st version

Testing:

1st rack travel in: 11.40 rpm : 896...901 Speed 2nd rack travel in: 4.00 rpm : 933...948 Speed

4th rack travel in: 1000

rpm : 0.00...1.00Speed

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 896...901 INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : PEN 12,2 a2 Edition : 15.03.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 846 882B

Injection pump

Pump designation : PE6P12OA32ORS32O6-1

EP type number : 0 411 826 775

Governor

Governor design. : RQ750PA783-1 Governer no. : 0 421 801 432

Customer—spec. information Customer : PENTA

Engine : TMD 122 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 24.3...24.5

100 s: (24.0...24.8)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

Spread cm3: 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 243.0...245.0

1000 : (240.0...248.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.70

Speed rpm: 747...752 2nd rack travel in: 4.00

Speed rpm : 777...792

4th rack travel in: 850

Speed rpm : 0.00...1.00

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 747...752

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

Remarks:

APPLICATION

Generator set

H28

Note remarks

Test sheet : PEN 12,2 a3 Edition : 15.03.90

Replaces

: ISO-4113 Test oil

: D 401 846 882C Combination no.

Injection pump

Pump designation : PE6P12OA32ORS32O6-1

: 0 411 826 775 EP type number

Governor

Governor design. : RQ750PA783-1 : 0 421 801 432 Governer no.

Customer-spec. information : PENTA Customer

Engine : TMD 122

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00

: 0-60-120-180-240-300 Phasing.

: 1-5-3-6-2-4

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

Firing order

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 24.3...24.5

100 s: (24.0...24.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.4 Spread

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 243.0...245.0 Del.quantity 1000 : (240.0...248.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Testing:

1st rack travel in: 9.70

rpm : 897...902 Speed

2nd rack travel in: 4.00

rpm : 933...948 Speed

4th rack travel in: 1000

rpm : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70 rpm : 897...902 Speed

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : RVI 9,3 a Edition : 29.03.89 : 22.12.88 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 893

Injection pump

Pump designation : PE6P110A72ORS3220 : 0 411 816 760 EP type number

Governor

Governor design. : RQV250...1000PA904

Governer no.

: 0 421 813 722

Customer-spec. information Customer : RVI

Engine

: BS 16 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm (3.55...3.75)
Rack travel in mm: 9.00...12.00

: 1-5-3-6-Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

: 1 Time to cyl. no.

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 12.9...13.2

100 s: (12.6...13.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40 2nd speed : 750 rpm

: 5.20...5.80 : 1000 travel mm 3rd speed rpm

: 7.40...7.60 travel mm

: 1350 4th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1080

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 900

: 129.0...132.0 Del.quantity 1000 : (126.5...134.5)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 12.20

rpm : 1080...1090

2nd rack travel in: 4.00

Speed rpm : 1180...1210 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 68...76

Testina:

Speed : 100 rpm Minimum rack trave: 10.00

rpm : 250 Rack travel in mm : 8.40...8.60

CONSTANT REGULATION

rpm : 355...465 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm Pressure hPa : 900

Rack travel mm : 13.20...13.30

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.30

2nd pressure hPa : 365

Rack travel in m: 12.90...13.00

3rd pressure hPa : 295

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 700 Speed

Del.quantity cm3/: 134.0...138.0 1000 s: (131.0...141.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 108.0...111.0

1000 s: (105.5...113.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1080...1090 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Remarks:

Note remarks

Test sheet : DAF 8,2 a : 14.04.89 Edition : 9.1.89 Replaces Test oil : ISO-4113

: 0 401 846 898 Combination no.

Injection pump

Pump designation : PE6P120A320RS3183-2

: 0 411 826 783 EP type number

Governor

Governor design. : RQV250...1000PA851-3

: 0 421 813 731 Governer no.

Customer-spec. information : DAF Customer

: HS 200 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 15.1...15.3

100 s: (14.8...15.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 5.8...6.2 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 0.40...0.80 travel mm rpm : 400 2nd speed

: 2.10...2.50 travel mm

rpm : 800 3rd speed : 4.70...5.10 travel mm

: 1250 4th speed rpm

: 8.30...8.70 travel mm

rpm : 1350 5th speed

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1225 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

: 151.0...153.0 Del.quantity

: (148.0...156.0) 1000

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 9.40

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1310...1340 4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 78...86

Testina:

Speed rpm : 100 Minimum rack trave: 7.10

rpm : 250 Speed

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 280...330 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 1000

: 10.40...10.50 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 385

Rack travel in m: 10.30...10.40

START CUT-OUT

1/min: 170 (0) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 135.0...137.0

1000 s: (132.0...140.0)

**BREAKAWAY** 

1mm rack travel less than full load rack tr: 9.40

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 260.0...300.0 1000 s: (256.0...304.0)

Remarks:

1st version

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Note remarks

: DAF 8,3 p 1 : 16.02.90 Test sheet Edition : 9.11.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 899

Injection pump

Pump designation : PE6P110A720RS3225 : 0 411 816 763 EP type number

Governor

Governor design. : RQ250/1200PA913 : 0 421 801 477 Governer no.

Customer-spec. information Customer : DAF

: HS 200 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 C15 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 12.4...12.6

100 s: (12.1...12.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 7.2...7.4 Del.quantity cm3/: 1.4...1.9 100 s: (1.1...2.1)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 550 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1000

: 124.0...126.0 Del.quantity

1000 : (121.5...128.5)

: 4.00 cm3 Spread : (7.50) 1000

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.50

rpm : 1235...1250 Speed 2nd rack travel in: 4.00 : 1300...1330

Speed rom 4th rack travel in: 1450

: 0.00...1.40 Speed rpm

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 5.3 Testing: rpm : 100 Speed Minimum rack trave: 6.70 : 250 Speed rpm Rack travel in mm : 5.20...5.40 Rack travel in mm: 2.00 Speed : 320...360 rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.80...12.90 2nd speed rpm : 1200 Rack travel in m: 12.70...12.90 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed mgn hPa : 1000 Pressure Rack travel mm : 12.50...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.90...11.10 2nd pressure hPa : 360 Rack travel in m: 12.10...12.20 3rd pressure hPa : 270 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1235...1250 Speed LOW IDLE

: 250

rpm

Rack travel in mm : 5.20...5.40
Remarks:

:

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Speed

: 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks : DAF 8,2 b : 14.04.89 Phasina : 0-60-120-180-240-300 Test sheet Edition Replaces : 9.1.89 Tolerance + - ° : 0.50 (0.75) : ISO-4113 Test oil BASIC SETTING Combination no. : 0 401 846 899 1st speed rpm : 1000Injection pump Rack travel in mm : 10.40...10.50 Pump designation : PE6P120A320RS3183-2 EP type number : 0 411 826 783 Del.quantity cm3/: 15.1...15.3 Governor Governor design. : RQ225/1200PA832-2 100 s: (14.8...15.6) : 0 421 801 465 Governer no. Spread cm3 : 0.5Customer-spec. information : DAF Customer 100 s: (0.9) : HS 200 Engine rpm : 225.0 2nd speed Rack travel in mm : 5.8...6.2 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.8100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -1 rpm : 550 Speed Rack travel in mm : 15.20...16.40 Test nozzle holder assembly : 1 688 901 019 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version rpm : 1000 Speed Aneroid pressure h: 1000 Orifice plate : 151.0...153.0 Del.quantity diameter mm : 0,8 1000 : (148.0...156.0) : 5.00 cm3 Spread : 1 680 750 067 1000 : (9.00) Test lines RATED SPEED Outside diameter x Wall thickness : 6.00x1.50x1000 1st version x Length mm (A) Injection pump setting values Setting point: Insp. values in parentheses Set equal delivery quant. Speed rpm Rack travel in mm: 15.8 per values Testing: 1st rack travel in: 9.30 BEGINNING OF DELIVERY rpm : 1235...1250 Test pressure, bar: 25...27 Speed 2nd rack travel in: 4.00 rpm : 1310...1340 : 3.70...3.80 Prestroke mm Speed : (3.65...3.85) 4th rack travel in: 1400

rpm : 0.00...1.00

Speed

Rack travel in mm : 9.00...12.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm: 5.6

Testing:

: 100 Speed rpm Minimum rack trave: 7.10 Speed rpm : 225

Rack travel in mm: 5.50...5.70
Rack travel in mm: 2.00
Speed rpm: 375...415

TORQUE CONTROL

Dimension a mm Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 10.40...10.50 2nd speed rpm : 1200

Rack travel in m: 10.30...10.50

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 man hPa : 1000 Pressure

: 10.40...10.50 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 385

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600

Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.30

rpm : 1235...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 260.0...300.0 1000 s: (256.0...304.0)

Remarks:

Note remarks

: DAF 8,3 p 5 Test sheet Edition : 04.05.90 : 9.11.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 905

Injection pump

Pump designation : PE6P110A720RS3225Z

: 0 411 816 762 EP type number

Governor

Governor design. : RQ250/1200PA913 : 0 421 801 477 Governer no.

Customer-spec. information Customer : DAF

: HT 168 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/: 1.4...1.9

100 s: (1.1...2.1) cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550

Speed Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000 Del.quantity : 120.0...122.0

1000 : (117.5...124.5)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 11.30

rpm : 1235...1250 Speed

2nd rack travel in: 4.00

: 1320...1350 Speed rpm

4th rack travel in: 1400

: 0.00...1.40 Speed rpm

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 5.8 Testing: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 250 Speed Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 320...360 Speed rom TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.60...12.70 2nd speed rpm : 1200 Rack travel in m: 12.50...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1000 Rack travel mm : 12.30...12.40 Measurement  $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 395 Rack travel in m: 12.00...12.10 3rd pressure hPa : 320 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0) **EREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30

rpm : 1235...1250

: 250

rpm

Rack travel in mm : 5.70...5.90 Remarks:

J12

Speed

Speed

LOW IDLE

Note remarks

Test sheet Edition

: MB 11,0 x : 02.02.90

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 846 910

Injection pump

Pump designation : PE6P110A320LS3851 : 0 411 816 765

EP type number Governor

Governor design: : RQ300/1050PA187-26

Governer no.

: 0 421 801 489

Customer-spec. information

Customer

: DAIMLER-BENZ

Engine

: 0M441

1st version kW

: 160.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 1050

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

100 s: (1.3)

cm3 : 0.8

rpm : 300.0

Rack travel in mm: 7.2...7.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

Spread

2nd speed

Spread

cm3 : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm: 650 Rack travel in mm: 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

Del.quantity

rpm : 1050

: 122.0...124.0

1000 : (119.5...126.5)

: 8.50

cm3 : (13.00) 1000

RATED SPEED

1st version Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.70

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 rpm : 0.00...2.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 7.5 Testing: Speed rpm : 200 Minimum rack trave: 9.10 rpm : 300 Rack travel in mm : 7.20...7.80 Rack travel in mm : 2.00 rpm : 420...460 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 122.0...127.0 1000 s: (119.5...129.5) cm3 : 11.00 Spread 1000 s: (14.) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

: ENA 12,9 a Test sheet : 05.03.90 Edition : 1.12.89 Replaces : ISO-4113 Test oil

: 0 401 846 915 Combination no.

Injection pump

Pumb designation : PE6P120A320RS3244 EP type number : 0 411 826 788

Governor

Governor design. : RQV250...1050PA808-4

: 0 421 813 821 Governer no.

Customer-spec. information : ENASA Customer

: 98 R1 AX Engine

: 331.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.30...3.40 Prestroke mm

: (3.25...3.45)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 28.7...28.9

100 s: (28.4...29.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm: 5.9...6.1 Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

rpm : 350 2nd speed

1.90...2.50 travel mm

700 3rd speed rpm

: 4.50...5.10 travel mm

: 1095 4th speed rpm : 8.00...8.20 travel mm

rpm : 1185 5th speed

: 9.00...9.40

travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed Aneroid pressure h: 1200

: 287.0...289.0 Del.quantity

1000 : (284.0...292.0)

: 5.00 cm3Spread

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 12.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1300 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...430 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

pm : 500 hPa : 1200 Speed rpm Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 10.70...11.10 2nd pressure hPa : 770

Rack travel in m: 12.60...12.70

3rd pressure hPa : 590

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1030

Del.quantity cm3/: 275.0...281.0 1000 s: (272.0...284.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 217.0...219.0 1000 s: (214.0...222.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 150.0...180.0 1000 s: (146.0...184.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : DAF 11,7 h : 05.03.90 Edition

Replaces

: ISO-4113 Test oil

: 0 401 846 916 Combination no.

Injection pump

Pump designation : PE6P12OA32ORS3248 : 0 411 826 792 EP type number

Governor

Governor design: RQ250/1000PA832-3

: 0 421 801 506 Governer no.

Customer-spec. information : DAF Customer

: WS 242 Engine

1st version kW : 242.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

: (4.15...4.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm : 6.5...6.7 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000

: 209.0...211.0 Del.quantity 1000 : (206.0...214.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed : 550 rpm

Rack travel in mm: 15.8

Testing:

1st rack travel in: 11.50 Speed rpm : 1035...1050

2nd rack travel in: 4.00

rpm : 1125...1155 Speed 4th rack travel in: 1250

rpm : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

man Rack travel in mm: 6.0

Testina:

Speed rpm Minimum rack trave: 7.50 rpm : 250 Speed

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

rpm : 335...375 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 13.10...13.20

2nd speed rpm : 1000

Rack travel in m: 13.00...13.20

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed man hPa : 1000 Pressure

: 12.50...12.60 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 340

Rack travel in m: 12.10...12.20

3rd pressure hPa : 250

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 164.0...166.0 1000 s: (161.0...169.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.50

rpm : 1035...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...300.0 1000 s: (256.0...304.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 14.0...20.0

1000 s: (11.0...23.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

Note remarks

Test sheet : DAF 11,7 h1 Edition : 05.03.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 917

Injection pump

Pump designation : PE6P120A320RS3248 : 0 411 826 792 EP type number

Governor

Governor design. : RQV250...1000PA851-4

: 0 421 813 828 Governer no.

Customer-spec. information Customer : DAF

: WS 242 Engine

: 242.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

: (4.15...4.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.40...1.60 travel mm

2nd speed rpm : 400

3.20...3.60 travel mm 800

3rd speed man : 5.80...6.20 travel mm

: 1000 4th speed rpm

: 7.90...8.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1025 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 209.0...211.0 Del.quantity

1000 : (206.0...214.0) Spread : 5.00

cm3 1000 : (9.00)

#### RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 11.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

rpm : 0.00...1.40Speed

LOW IDLE 1

Control lever

position degrees: 82...90

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

: 250 Speed rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 275...385 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 12.50...12.60 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20 2nd pressure hPa : 340 Rack travel in m: 12.10...12.20

3rd pressure hPa : 250

Rack travel in m: 11.40...11.60

START CUT-OUT

 $1/\min: 200(0)$ Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 164.0...166.0

1000 s: (161.0...169.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 260.0...300.0

1000 s: (256.0...304.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 14.0...20.0

1000 s: (11.0...23.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Note remarks

Test sheet Edition : MB 11.0 w : 12.04.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 918

Injection pump

Pump designation : PE6P110A320LS3851 : 0 411 816 765 EP type number

Governor

Governor design. : RQV300...1050PA884-6

: 0 421 813 832 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM441 Engine

1st version kW : 160.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6 Spread 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.00...1.40 travel mm

rpm : 500 2nd speed

: 3.20...3.80 travel mm

rpm : 850 3rd speed

travel mm : 6.00...6.40

4th speed rpm : 1100

: 8.10...8.30 travel mm

rpm : 1400 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 650 Speed

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1050 : 122.0...124.0 Del.quantity : (119.5...126.5) 1000 : 8.50 Spread cm31000 : (13.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 Speed rpm: 0.00...2.00 LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed rpm : 200 Minimum rack trave: 9.10 rpm : 300 Rack travel in im : 7.20...7.80 Rack travel in mm : 2.00 rpm : 450...510 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 122.0...127.0 1000 s: (119.5...129.5) cm3 : 11.00 Spread 1000 s: (14.) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

J22

#### Note remarks

Test sheet : VOL 10,0 u2 : 06.04.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 921

Injection pump

Pump designation : PE6P110A320RS3197

: 0 411 816 752 EP type number

Governor

Governor design. : RQV250...1100PA589

: 0 421 813 307 Governer no.

Customer-spec. information

: VOLVO-MUNKTELL Customer

Engine : TD102 KF

1st version kW : 200.0 : 2200 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 4.3...4.5 Del.quantity cm3/: 2.5...2.9

100 s: (2.2...3.2) cm3 : 0.4 Spread

100 s: (0.7)

# (B) Setting of injection pump with governor

#### GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.20...1.30 travel mm rpm : 350 2nd speed

: 2.20...2.70 travel mm

3rd speed rpm : 450

: 3.70...4.10 : 750 travel mm

4th speed rpm : 6.40...6.60 travel mm

5th speed : 1160 man

travel mm : 8.10...8.30

# GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1180 Speed

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1000

Del.quantity : 162.0...164.0 1000 : (159.0...167.0)

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 10.70 Speed rpm : 1160...1170 2nd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

Speed : 100 rpm Minimum rack trave: 5.90 : 250 Speed rpm

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

rpm : 250...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed man hPa : 1000 Pressure

: 11.70...11.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 390 Rack travel in m: 11.40...11.50 Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1000 Speed

Del.quantity cm3/: 146.0...150.0

1000 s: (143.0...153.0)

Aneroid pressure h: -

: 700 Speed rpm

Del.quantity cm3/: 127.0...129.0

1000 s: (124.0...132.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.30...4.50

Del.quantity cm3/: 25.0...29.0

1000 s: (22.0...32.0)

Spread cm3 : 4.501000 s: (7.50)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

Note remarks

: ENA 11,9 e1 Test sheet Edition : 23.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 922

Injection pump

Pump designation: PE6P12OA32ORS3176-3

: 0 411 826 793 EP type number

Governor

Governor design. : RQV250...1050PA808

: 0 421 813 553 Governer no.

Customer-spec. information : ENASA Customer

: 96 R1 CX Engine

: 221.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm rpm : 350

2nd speed : 1.90...2.50 travel mm

3rd speed rpm : 700

: 4.50...5.10 travel mm : 1095

4th speed rpm : 8.00...8.20 travel mm

: 1185 5th speed rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 650 Speed Aneroid pressure h: 900 Del.quantity : 196.0...198.0 1000 : (193.0...201.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.80

Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed : 100 rom Minimum rack trave: 7.50 rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...500 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...10.00

2nd pressure hPa : 500

Rack travel in m: 12.30...12.40

3rd pressure hPa : 190

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1030 Del.quantity cm3/ : 212.0...218.0 1000 s: (209.0...221.0)

Aneroid pressure h: -

rpm\_ : 500 Speed

Del.guantity cm3/: 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 14,6 a 3 : 24.02.89 Edition : 5.84 Replaces : ISO-4113 Test oil

Combination no. : 0 401 848 756

Injection pump

Pump designation : PE8P110A320LS3802-10

EP type number : 0 411 818 710

Governor

Governor design. : RQV300...1150PA486-3

: 0 421 813 411 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M422

: 184.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Lenath mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Phasing

rpm: 1150 1st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.2...11.6

100 s: (10.9...11.9)

cm3 : 0.7Spread

100 s: (1.0)

rpm : 300.02nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 : 1.60...1.80 1st speed

travel mm 2nd speed rpm : 800

travel mm : 5.80...6.20

: 1200 3rd speed rpm

: 8.20...8.40 travel mm

: 1260 4th speed rpm

: 9.60...10.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1230 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 112.0...116.0 Del.quantity

1000 : (109.0...119.0)

cm3 : 7.00 1000 : (10.00) Spread RATED SPEED 1st version Control lever position degrees: 50...58 Testing: 1st rack travel in: 10.00 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm: 1240...1270 4th rack travel in: 1400 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 18...26 Testing: Speed rpm : 100 Minimum rack trave: 9.70 Speed rpm : 300 Rack travel in mm : 8.00...8.20 Rack travel in mm : 2.00 rpm : 410...480 Speed TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 11.00...11.10 2nd speed rpm : 600 Rack travel in m: 11.20...11.40 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 92.0...96.0 1000 s: (89.0...99.0)

Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

idrks:

Speed

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.00

STARTING FUEL DELIVERY

rpm : 1190...1200

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : KHD 12,8 a Test sheet : 16.02.90 Edition : 24.11.89 Replaces : ISO-4113 Test oil Combination no. : 0 401 848 780 Injection pump Pump designation : PE8P120A920/5LS3174 : 0 411 828 719 EP type number Governor Governor design. : RQV300...1150PA802 : 0 421 813 538 Governer no. Customer-spec. information Customer : KHD : BF8L5130 Engine : 265.0 1st version kW : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 15.00...19.00 Firing order : 1-8-7-2-6-5-4-3

: 0-45-90-135-180-225-Phasina 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom: 1150 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 16.6...16.8

100 s: (16.3...17.1)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 300.0 2nd speed Rack travel in mm: 7.6...7.8 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9)

cm3 : 0.9100 s: (1.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 300

Spread

: 1.00...1.40 travel mm 2nd speed : 400 rpm

travel mm

2.20...2.80 550 3rd speed rpm : 3.50...4.10 travel mm

: 1200 4th speed rpm

travel mm : 8.20...8.40

: 1285 5th speed rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm : 1220 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 900

: 166.0...168.0 Del.quantity

1000 : (163.0...171.0)

cm3 : 6.00Spread

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 12.20

Speed rpm : 1190...1200 2nd rack travel in: 4.00

rpm : 1310...1340 Speed

4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 81...89

Testina:

Speed : 100 rpm Minimum rack trave: 9.20

Speed rpm : 300 Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 13.20...13.30

2nd speed rpm : 700

Rack travel in m: 13.50...13.70

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : 900

: 13.40...13.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.80...13.00

2nd pressure hPa : 500

Rack travel in m: 13.10...13.20

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 700

Del.quantity cm3/: 167.0...171.0 1000 s: (164.0...174.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 170.0...190.0

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : MB 14,7 L Edition : 15.08.89 : 29.4.88 Replaces : ISO-4113 Test oil

Combination no. : 0 401 848 798

Injection pump

Pump designation : PE8P110A320LS3846 : 0 411 818 717 EP type number

Governor

Governor design. : RQ300/1050PA187-21

: 0 421 801 438 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 Engine

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 12.8...13.0

100 s: (12.5...13.2)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...8.0

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

cm3 : 0.5Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 650

Rack travel in mm : 13.80...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 128.0...130.0 Del.quantity 1000 : (125.5...132.5)

Spread cm3 : 6.0

1000 : (9.5)

RATED SPEED

1st version

Setting point:

rpm : 650 Speed Rack travel in mm: 14.2 Testing:

1st rack travel in: 12.00

rpm : 1095...1110 Speed

2nd rack travel in: 4.00

Speed rpm : 1155...1185 4th rack travel in: 1300

rpm : 0.00...2.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 7.60

Testing:

rpm : 200 Speed Minimum rack trave: 9.50

Speed rpm : 300 Rack travel in mm : 7.40...8.00

Rack travel in mm : 2.00 Speed rpm : 400...460

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rom

Del.quantity cm3/: 128.0...134.0 1000 s: (125.0...137.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.00

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

K04

Note remarks

: MB 14,7 L 1 : 15.08.89 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 401 848 798 Combination no.

Injection pump

Pump designation : PE8P110A320LS3846-1

: 0 411 818 719 EP type number

Governor

Governor design. : RQ300/1050PA187-25

Governer no. : 0 421 801 482

Customer-spec, information

Customer : DAIMLER-BENZ

: 0M442 Engine

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.90X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-4-1

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 12.0...12.2

100 s: (11.8...12.5)

cm3 : 0.8Spread

100 s: (1.2)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 120.0...122.0 Del.quantity 1000 : (118.0...125.0)

> : 8.50 cm3

Spread

1000 : (12.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5

Testing: 1st rack travel in: 10.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 rpm : 0.00...2.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.60 Testing: Speed : 200 rpm Minimum rack trave: 9.10 Speed rpm : 300 Rack travel in mm : 7.20...7.80 Rack travel in mm: 2.00 rpm : 420...460 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

: MB 14,7 d 8 Test sheet : 12.01.90 Edition : 28.6.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 848 804

Injection pump

Pump designation : PE8P110A320LS3842-1

: 0 411 818 716 EP type number

Governor

Governor design. : RQV350..1050PA378-7

: 0 421 813 714 Governer no.

Customer-spec. information

: MERCEDES BENZ Customer

: 0M442 Engine

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow.

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 350.02nd speed Rack travel in mm : 8.0...8.3

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed 1.50...1.70 travel mm

: 800 2nd speed rpm

travel mm : 4.90...5.30

: 1100 3rd speed rpm

: 7.90...8.50 travel mm : 1150 4th speed rpm

: 8.90...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1050 Speed

Speed Del.quantity 1000 : 137.0...139.0

: (134.5...141.5)

cm3 : 4.00Spread 1000 : (7.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 11.70 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 66...74

Testing:

: 250 Speed rom Minimum rack trave: 9.50 : 350 Speed rpm

Rack travel in mm : 8.00...8.30

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) beea

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 124.0...128.0

1000 s: (121.0...131.0)

cm3 : 5.00Spread

1000 s: (8.00)

: 1050 Speed rpm

Del.quantity cm3/: 87.0...89.0 \*

1000 s: (84.0...92.0)

Spread cm3 : 6.00

1000 s: (9.00)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed : 1090...1100 rom

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

\* = Set at reduced-delivery stop.

K08

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 14,7 L 2 Test sheet : 12.04.90 Edition Replaces : ISO-4113 Test oil : 0 401 848 805 Combination no. Injection pump Pump designation : PE8P110A320LS3846-1 : 0 411 818 719 EP type number Governor Governor design. : RQ300/1050PA187-27 : 0 421 801 488 Governer no. Customer-spec, information Customer : DAIMLER-BENZ : 0M442 Engine : 195.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 101 **Opening** : 207...210 pressure, bar Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315 : 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 11.1...11.3

100 s: (10.8...11.5)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread 100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 111.0...113.0 Del.quantity 1000 : (108.5...115.5)

: 8.50 cm3

Spread 1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5

Testing: 1st rack travel in: 9.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...2.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.3 Testing: Speed rpm : 200 Minimum rack trave: 9.20 Speed rpm: 300
Rack travel in mm: 7.00...7.60
Rack travel in mm: 2.00 : 400...440 Speed rom FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 105.0...111.0 1000 s: (102.5...113.5) cm3 : 11.00Spread 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

Test sheet : MB 14,7 L 3 : 02.01.90 Edition

Replaces

: ISO-4113 Test oil

: 0 401 848 806 Combination no.

Injection pump

Pump designation: PE8P110A320LS3846-1

EP type number : 0 411 818 719

Governor

Governor design. : RQ300/1050PA187-28

: 0 421 801 492 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0.6 diameter mm

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

(4.35...4.55)

Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6 Spread

100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 122.0...124.0 Del.quantity

1000 : (119.5...126.5)

: 8.50 cm3 Spread

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5

Testina: 1st rack travel in: 10.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...2.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.5 Testing: Speed rpm : 200 Minimum rack trave: 9.10 : 300 rpm Rack travel in mm : 7.20...7.80 Rack travel in mm : 2.00 rpm : 420...460 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 122.0...127.0 1000 s: (119.5...129.5) cm3 : 11.00 Spread 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

Test sheet : MB 14,7 r : 12.04.90 Edition

Replaces

Test oil : ISO-4113

: 0 401 848 808 Combination no.

Injection pump

Pump designation : PE8P110A320LS3846-1

EP type number : 0 411 818 719

Governor

Governor design. : RQV300...1050PA884-5

: 0 421 813 831 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 Engine

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-

3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread

100 s: (1.1)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm

2nd speed : 500 man

travel mm : 3.20...3.80

rpm : 850 3rd speed

travel mm : 6.00...6.40

4th speed rpm : 1100

: 8.10...8.30 travel mm

5th speed rpm : 1400

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Speed

Degree: -1 rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050Speed : 122.0...124.0 Del.quantity 1000 : (119.5...126.5) : 8.50 Spread cm3 1000 : (13.00) RATED SPEED 1st version Control Lever position degrees: 114...122 Testing: 1st rack travel in: 10.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1350 Speed rpm : 0.00...2.00 LOW IDLE 1 Control lever position degrees: 85...93 Testina: Speed rpm : 200 Minimum rack trave: 9.10 Speed rpm: 300
Rack travel in mm: 7.20...7.80
Rack travel in mm: 2.00 rpm : 450...510 Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 122.0...127.0 1000 s: (119.5...129.5) Spread cm3 : 11.00 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

Note remarks

: MB 14,7 r 1 Test sheet : 12.04.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 848 810

Injection pump

Pump designation: PE8P110A320LS3846-1

: 0 411 818 719 EP type number

Governor

Governor design. : RQV300...1050PA884-7

: 0 421 813 859 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 Engine

: 195.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 11.1...11.3

100 s: (10.8...11.5)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread 100 s: (1.1)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.00...1.40 travel mm

rpm : 500 2nd speed

: 3.20...3.80 travel mm

3rd speed rpm : 850

: 6.00...6.40 travel mm

rpm : 1100 4th speed

: 8.10...8.30 travel mm

rpm : 1400 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 650 Speed

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed : 111.0...113.0 Del.quantity 1000 : (108.5...115.5) Spread cm3 : 8.50 1000 : (13.00) RATED SPEED 1st version Control lever position degrees: 104...112 Testing: 1st rack travel in: 9.90 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rpm : 0.00...2.00Speed LOW IDLE 1 Control lever position degrees: 85...93 Testing: : 200 Speed rpm Minimum rack trave: 9.10 Speed rpm : 300 Rack travel in mm : 7.20...7.80 Rack travel in mm : 2.00 : 450...510 Speed rpm FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

: MB 14,7 c 8 Test sheet : 06.04.90 Edition

Replaces

: ISO-4113 Test oil

: 0 401 848 812 Combination no.

Injection pump

Pump designation : PE8P110A320LS3842 : 0 411 818 714 EP type number

Governor

Governor design. : RQ300/1050PA187-29

: 0 421 801 527 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442

: 206.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow.

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15) Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 12.4...12.6

100 s: (12.1...12.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 8.2...8.5 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650 Speed

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 124.0...126.0 : (121.5...128.5) Del.quantity 1000

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

: 650 Speed Rack travel in mm: 14.0

Testing:

1st rack travel in: 10.80

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1350 rpm : 0.00...2.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 6.9 Testing: Speed : 200 rpm Minimum rack trave: 9.00 rpm : 300 Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 : 400...440 Speed rom FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 109.0...112.0 1000 s: (106.0...115.0) cm3 : 7.00Spread 1000 s: (10.0) RACK STOP ADJUSTMENT : 600 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

## Note remarks

: MB 18,3 b Test sheet : 06.04.90 Edition : 8.81 Replaces Test oil : ISO-4113

Combination no. : 0 401 849 701

Injection pump

Pump designation : PE10P110A320LS3808

EP type number : 0 411 819 700

Governor

Governor design. : RQV300...1150PA524-2

: 0 421 813 264 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 423

: 259.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 10- 9- 4- 1- 8-Firing order

: 0-45-72-117-144-189-Phasina

216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 12.3...12.5

100 s: (12.0...12.8)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 300.02nd speed Rack travel in mm : 8.3...8.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1230 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 123.0...125.0 Del.quantity

1000 : (120.0...128.0)

cm3 : 4.00 Spread

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testina:

1st rack travel in: 11.20

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

4th rack travel in: 1300

rpm : 0.00...0.50Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Testing:

rpm : 100 Speed Minimum rack trave: 10.10 Speed rpm : 300 Rack travel in mm : 8.30...8.60

CONSTANT REGULATION

rpm : 330...465 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 115.0...119.0 1000 s: (112.0...122.0)

Spread cm3 : 6.00 1000 s: (9.00)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

:

Note remarks

Test sheet : KHD 16,0 d2 Edition : 16.02.90 Replaces : 24.7.87 Test oil : ISO-4113

: 0 401 849 740 Combination no.

Injection pump

Pump designation: PE10P110A920/5LS3164 : 0 411 819 708 EP type number

Governor

Governor design. : RQV300...1150PA549-3

Governer no. : 0 421 813 664

Customer-spec. information Customer : KHD

: BF10L513 Engine

1st version kW : 294.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1,50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 10- 9- 4- 3- 6-Firing order

5- 8- 7- 2

: 0-27-72-99-144-171-216-243-288-315 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 14.8...15.0

100 s: (14.5...15.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 7.5...7.7 Del.guantity cm3/: 1.2...1.7

100 s: (1.0...2.0) cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

: 1.00...1.40 travel mm rpm : 450 2nd speed

: 2.60...3.20 travel mm

rpm : 700 3rd speed

: 4.40...5.00 travel mm

rpm : 1195 4th speed : 8.10...8.30 travel mm

5th speed rpm: 1310

: 9.20...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1220

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 1200

: 148.5...150.5 Del.quantity

1000 : (145.0...153.0)

Rack travel in m: 12.00...12.20 cm3 : 4.00 Spread 1000 : (7.50) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 117...125 Testina: 1st version 1st rack travel in: 11.80 Aneroid pressure h: 1200 Speed rpm : 650
Del.quantity cm3/: 154.0...158.0
1000 s: (151.0...161.0) rpm : 1195...1205 Speed 2nd rack travel in: 4.00 rpm : 1295...1325 Speed 4th rack travel in: 1450 Aneroid pressure h: rpm : 450 rpm : 0.00...1.00Speed Speed Del.quantity cm3/: 118.5...121.5 1000 s: (116.0...124.0) LOW IDLE 1 Control lever position degrees: 71...79 **BREAKAWAY** Testina: rpm 1st version : 100 Speed Minimum rack trave: 9.00 1mm rack travel less than : 300 rpm Rack travel in mm : 7.50...7.70 full load rack tr: 11.80 rpm : 1195...1205 Speed CONSTANT REGULATION rpm : 300...530 STARTING FUEL DELIVERY Speed TORQUE CONTROL Dimension a mm : 0.40 rpm : 100 Speed Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) Torque control curve - 1st version : 1150 1st speed rpm Rack travel in m: 12.80...12.90 : 650 LOW IDLE 2nd speed rpm Rack travel in m: 13.20...13.30 Speed rpm : 300 Rack travel in mm : 7.50...7.70 3rd speed rpm : 840 Rack travel in m: 13.10...13.30 h speed rpm : 1010 Del.quantity cm3/: 12.5...17.5 1000 s: (10.0...20.0) 4th speed Rack travel in m: 12.90...13.10 Spread cm3 : 4.501000 s: (7.50) Aneroid/Altitude Compensator Test Remarks: 1st version Setting : 450 Speed rom hPa : 1200 Pressure : 13.20...13.30 Rack travel mm Measurement 1/min: 450 Speed 1st pressure hPa : -Rack travel in m: 11.80...12.00 2nd pressure hPa : 850 Rack travel in m: 12.75...12.85 3rd pressure hPa : 650

Note remarks

Test sheet : MAN 18,2 f2

Edition : 19.03.90

Replaces

Test oil : ISO-4113

: 0 401 849 744B Combination no.

Injection pump

Pump designation: PE10P120A520/4LS3849

: 0 411 829 708 EP type number

Governor

Governor design. : RQ1050PA663-7 Governer no. : 0 421 801 331

Cust. part no. : 2-7977

Customer-spec. information Customer : MAN

Engine : D2840 LE

: 352.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30

: (4.15...4.35)

Rack travel in mm : 9.00...12.00 Firing order

: 10- 9- 4- 1-- 6- 3- 5-

: 0-45-72-117-144-189-Phasing

216-261-288-333

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 10

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 19.4...19.6

100 s: (19.1...19.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 194.0...196.0 Del.quantity 1000 : (191.0...199.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.30

Speed rpm: 1050...1055 2nd rack travel in: 4.00

rpm : 1090...1105 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

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APPLICATION

Generator set

Note remarks

: MAN 18,2 i Test sheet Edition : 30.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 745

Injection pump

Pump designation : PE10P120A520/4LS3855

: 0 411 829 709 EP type number

Governor

Governor design: : RQ300/1000PA837 : 0 421 801 372 Governer no.

Customer-spec. information : MAN Customer

: D2840LF/460 Engine

1st version kW : 338.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.90...4.00 Prestroke mm

: (3.85...4.05)

Rack travel in mm : 9.00...12.00

: 10-9-4-1-7 Firing order - 6- 3- 5-

: 0-45-72-117-144-189-Phasing

216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000Speed Aneroid pressure h: 1000

: 204.0...206.0 Del.quantity

1000 : (201.0...209.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rom Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50 rpm : 1045...1060 Speed 2nd rack travel in: 4.00 Speed rpm : 1125...1155 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm : 5.3 Testina: Speed rpm : 100 Minimum rack trave: 6.80 Speed rpm : 300 Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 : 365...405 Speed rom TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.00...11.10 2nd speed rpm : 600 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1000 Pressure : 10.50...10.60 Rack travel mm Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 9.20...9.40 2nd pressure hPa : 380 Rack travel in m: 9.60...9.70 3rd pressure hPa : 500 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -: 500

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN - NR. 2-7778

rom Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

Note remarks

Test sheet

: KHD 16,0 d5

Edition

: 16.02.90

Replaces Test oil

: ISO-4113

Combination no.

: 0 401 849 747

Injection pump

Pump designation : PE10P110A920/5LS3164

EP type number

: 0 411 819 708

Governor

Governor design. : RQV300...1075PA821-1

Governer no.

: 0 421 813 837

Customer—spec. information Customer : KHD

Engine

: BF10L513 ECE

1st version kW

: 278.0

Rated speed

: 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 10- 9- 4- 3- 6-

5- 8- 7- 2

Phasing

: 0-27-72-99-144-171-2

16-243-288-315

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1075

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

Spread

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.2

Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

travel mm

1.00...1.40

2nd speed rpm : 450

travel mm

: 3.00...3.50

3rd speed

rpm : 800

travel mm

: 5.00...5.50

4th speed rpm

: 1120

travel mm 5th speed

: 8.40...8.60 : 1210

travel mm

rpm

: 9.60...10.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1075

Aneroid pressure h: 900

: 142.0...144.0

Del.quantity

1000 : (139.0...147.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 11.00

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 83...91

Testing:

Speed rpm : 100 Minimum rack trave: 10.50 rpm : 300

Rack travel in mm : 7.00...7.20

CONSTANT REGULATION

rpm : 300...550 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.00...12.10 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.40 2nd pressure hPa : 430

Rack travel in m: 11.80...11.90

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 800 Speed rpm

Del.quantity cm3/: 143.0...147.0

1000 s: (141.0...149.0)

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 117.0...119.0

1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : WAU 1 a 1 : 14.02.1990 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 098

Injection pump

Pump designation : PE6P130A420LS67

Governor

Governor design. : RSV300...900P4/308DR

Customer-spec. information Customer : WAUKESHA

: F-1197 D Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 35...45

Inlet press., bar: 1.5

Test nozzle holder

: 0 681 443 022 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 026

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.0...2.1 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300

Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

Phasina

1st speed rpm: 800 Rack travel in mm: 9.00

Del.quantity cm3/: 20.7...21.4

100 s: (-)

cm3 : 0.8Spread

100 s: (-)

2nd speed rpm : 600

Rack travel in mm : 12.00 Del.quantity cm3/ : 28.3...30.1

100 s: (-)

3rd speed rpm : 200 Rack travel in mm: 6.00 Del.quantity cm3/: 4.6...6.3

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 225.0...229.0

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testina:

1st rack travel in: 16.00 rpm : 890...910 Speed 2nd rack travel in: 11.00 rpm : 925...955 Speed

3rd rack travel in: 3.00...5.00 Speed rpm : 985...1015

4th rack travel in: 1100

rpm : 0.0...1.00Speed

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

: 300 Speed rpm Rack travel in mm: 6.00

Testing:

Speed rpm : 100

Minimum rack trave: 19.00 Speed rpm : 300
Rack travel in mm : 5.70...6.30
Rack travel in mm : 3.70 : 400 Speed rpm Speed : 360 rpm Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 880 Rack travel in m: -2nd speed rpm : 600 Rack travel in m: rd speed rpm : 500 Rack travel in m: 0.10...0.30 3rd speed 4th speed rpm : 360 Rack travel in m: 0.40...0.60 FUEL DELIVERY CHARACTERISTICS 1st version : 700 Speed rpm Del.quantity cm3/: 234.0...240.0 1000 s: (-) Speed rpm : 500 Del.quantity cm3/: 226.0...232.0 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: ? rpm : 920 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 589.0...591.0 1000 s: (-) HIGH IDLE 1st version rpm : 970 Speed Del.quantity cm3/: 28.0...38.0 1000 s: (-) Remarks:

Note remarks

Test sheet : DAF 11,6 o7
Edition : 04.05.90
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 401 876 295

Injection pump

Pump designation : PE6P12OA32ORS415-1 EP type number : 0 411 826 123

Governor

Governor design. : RSV250...1000P5A508-

1

Governer no. : 0 421 833 194

Customer—spec. information Customer : DAF

Engine : DKZ 1160

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850 Aneroid pressure h: 700

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 11.50

Speed rpm : 1035...1045

2nd rack travel in: 4.00

Speed rpm : 1115...1145

3rd rack travel in: 4.00 rpm : 1180...1220 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm : 250° Rack travel in mm: 6.0 Testing: Speed : 100 rpm : 250 Speed rpm Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 rpm : 630...690 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.70...12.80 rpm : 400 2nd speed Rack travel in m: 12.70...12.90 3rd speed rpm : 300 Rack travel in m: 13.00...13.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom Pressure hPa : 700 Rack travel mm : 12.50...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 340
Rack travel in m: 11.80...11.90
3rd pressure hPa : 260 Rack travel in m: 10.60...11.00 FUEL DELIVERY CHARACTERISTICS 1st version

1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1035...1045 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 250 Speed Rack travel in mm : 6.40...6.60 Remarks:

Speed

Aneroid pressure h: -

rpm : 600 Del.quantity cm3/: 140.0...142.0

1000 s: (137.0...145.0)

Note remarks

: PEN 6,1 q Test sheet : 12.01.90 Edition : 10.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 327

Injection pump

Pump designation : PE6P110A320RS499 EP type number : 0 411 816 169

Governor

Governor design. : RSV325...1400P2A374-

: 0 421 833 220 Governer no.

Customer-spec. information

: VOLVO-PENTA Customer

: TAMD61A Engine

: 220.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 325.02nd speed Rack travel in mm: 4.1...4.3

Del.quantity cm3/: 1.1...1.5

100 s: (0.9...1.7) cm3 : 0.3

Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 900

Anerous Del.quantity 1000 : 120.5...122.5 : (117.5...125.5)

cm3 : 4.00

: (7.50) 1000

RATED SPEED

Spread

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 10.10

rpm : 1450...1460 Speed

2nd rack travel in: 4.00 rpm : 1530...1560 Speed 4th rack travel in: 1630 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 3.7 : 325 Speed rpm Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 rpm : 440...500 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 900 Pressure : 11.00...11.20 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 360 Rack travel in m: 8.70...8.80 3rd pressure hPa : 730 Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 1400 Speed Del.quantity cm3/: 122.5...126.5 1000 s: (119.5...129.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 54.5...58.5 1000 s: (51.5...61.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10

rpm : 1450...1460

Speed rpm : 100 Del.quantity cm3/: 135.0...165.0 LOW IDLE rpm : 325 Speed Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0) cm3 : 3.00Spread 1000 s: (6.00) Remarks: APPLICATION Navy

Speed

STARTING FUEL DELIVERY

Note remarks

: ENA 10,1 f Test sheet Edition : 30.03.90 : 13.12.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 876 332

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design. : RSV250...1000P1A532

: 0 421 833 273 Governer no.

Customer-spec. information Customer : ENASA

Engine : 9105.42.25.21

1st version kW : 113.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 113.0...115.0 Del.quantity 1000 : (111.0...117.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 84...92

Testing:

1st rack travel in: 10.90 rpm : 790...800 Speed 2nd rack travel in: 4.00

rpm : 815...845 Speed

3rd rack travel in: 4.00 rpm : 815...845 Speed 4th rack travel in: 1000 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 330...390 TORQUE CONTROL Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 11.90...12.00 2nd speed rpm : 450 Rack travel in m: 11.90...12.10 3rd speed rpm : 300 Rack travel in m: 13.20...13.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 790...800 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 250 Speed Rack travel in mm : 5.90...6.10 Remarks: APPLICATION Generator set

Note remarks

: DAF 11,7 f Test sheet Edition : 30.03.90 Replaces : 16.6.88 Test oil : ISO-4113

Combination no. : 0 401 876 335

Injection pump

Pump designation : PE6P120A320RS415-1 EP type number : 0 411 826 123

Governor

: RSV250...1100P5A508-Governor design.

: 0 421 833 298 Governer no.

Customer—spec. information : DAF Customer

: DKV 1160 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 17.1...17.3

100 s: (16.8...17.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 700

: 171.0...173.0 Del.quantity 1000 : (168.0...176.0) cm3 : 5.00

Spread

: (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testina:

1st rack travel in: 9.10

rpm : 1135...1145 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

3rd rack travel in: 4.00 Speed rpm : 1200...1230 4th rack travel in: 1375 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm : 5.8 Testing: : 100 Speed rpm : 250 Speed rpm Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 rpm : 630...730 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 650 1st speed Rack travel in m: 11.40...11.50 rpm : 1090 2nd speed Rack travel in m: 10.10...10.30 3rd speed rpm : 800 Rack travel in m: 10.80...11.00 4th speed rpm : 850 Rack travel in m: 10.40...10.70 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 700 Pressure : 11.10...11.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 290 Rack travel in m: 10.70...10.90 3rd pressure hPa : 260 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 1090

Del.quantity cm3/: 158.0...162.0 1000 s: (155.0...165.0)

: 600

Aneroid pressure h: -

rpm

Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.10 Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 310.0...350.0 1000 s: (306.0...354.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.20...6.40

Remarks:

:

Speed

## Note remarks

: DAF 11,7 g : 16.02.90 Test sheet Edition : 9.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 336

Injection pump

Pump designation : PE6P12OA32ORS415-1 : 0 411 826 123 EP type number

Governor

Governor design. : RSV250...1050P5A539

: 0 421 833 299 Governer no.

Customer-spec. information Customer : DAF

: KT 191 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27 : 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.4...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 100 s: (1.2) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 650 Speed Aneroid pressure h: 700

: 161.0...163.0 Del.quantity 1000 : (158.0...166.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Testing:

1st rack travel in: 9.20

rpm : 1085...1095 Speed

2nd rack travel in: 4.00 Speed rpm : 1125...1155

3rd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1320 Speed rom : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring : 250 Speed rpm Rack travel in mm: 5.8 : 250 Speed rpm Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 rpm : 630...730 Speed

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1040
Rack travel in m: 10.20...10.40
2nd speed rpm : 650
Rack travel in m: 11.10...11.20
3rd speed rpm : 805
Rack travel in m: 10.80...11.00
4th speed rpm : 850
Rack travel in m: 10.50...10.70

Aneroid/Altitude Compensator Test

1st version Setting Speed rpm : 600 Pressure hPa : 700

Rack travel mm : 10.80...10.90

Measurement Speed 1/min: 600

1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 310

Rack travel in m: 10.40...10.50

3rd pressure hPa : 250

Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 1040
Del.quantity cm3/: 160.0...164.0
1000 s: (157.0...167.0)
Aneroid pressure h: Speed rpm : 600
Del.quantity cm3/: 130.0...132.0
1000 s: (127.0...135.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.20 Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 300.0...340.0 1000 s: (296.0...344.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.20...6.40

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : IFS 23,1 d : 15.03.90 Edition : 15.8.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 876 337

Injection pump

Pump designation : PE6P130A320S521 EP type number : 0 411 836 044

Governor

Governor design. : RSV350...1500P0A524 Governor no. : 0 421 833 256

Customer-spec. information Customer : ISOTTA

: ID38 SS-6V Engine

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 18.00...21.00

Firing order : 1-2-3-4-5-6

: 0-45-120-165-240-285 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 15001st speed

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 23.9...24.2

100 s: (23.5...24.5)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 500.0 2nd speed Rack travel in mm: 8.2...8.4 Del.quantity cm3/: 9.6...10.2 100 s: (9.2...10.6) Spread cm3 : 1.0

100 s: (1.4)

rpm : 500 3rd speed Rack travel in mm: <6.60 Del.quantity cm3/: - \*\*

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed Aneroid pressure h: 900

Del.quantity : 239.0...242.0 1000 : (235.5...245.5)

cm3 : 6.00Spread

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Testina: 1st version 1st rack travel in: 11.50 rpm : 1540...1550 1mm rack travel less than 2nd rack travel in: 4.00 rpm : 1650...1680 full load rack tr: 11.50 Speed 3rd rack travel in: 4.00 rpm : 1540...1550 Speed Speed rpm : 1665...1695 4th rack travel in: 1750 HIGH IDLE rpm : 0.30...1.40Speed 1st version rpm : 500 LOW IDLE 1 Speed Rack travel in mm: <6.60 Control lever Del.quantity cm3/: - \*\* 1000 s: (-) position degrees: 68...76 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.4 2nd version rpm : 350 rpm : 500 Speed Speed Rack travel in mm : 6.80...7.00 Rack travel in mm : <7.1 Del.quantity cm3/: <50.0 1000 s: (-) Rack travel in mm : 2.00 Speed rpm : 525...585 3rd version TORQUE CONTROL Speed rpm : 500 Torque control curve - 1st version 1st speed rpm : 1500 Rack travel in m: 12.50...12.60 Rack travel in mm : 7.70...7.90 Del.quantity cm3/: 80.0 1000 s: (-) 2nd speed rpm : 600 Rack travel in m: 12.50...12.70 3rd speed rpm : 400 LOW IDLE Rack travel in m: 13.70...14.30 Speed rpm: 350 Rack travel in mm: 6.70...7.10 Aneroid/Altitude Del.quantity cm3/: 20.0...26.0 \* Compensator Test 1000 s: (-) Remarks: 1st version Setting : 600 Speed rpm \* applies to cylinders 2, 4 and 6 Pressure hPa : 900 \*\* applies for cylinders 1, 3 and 5 Rack travel mm : 12.50...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.50...11.60 2nd pressure hPa : 300 Rack travel in m: 11.90...12.00 FUEL DELIVERY CHARACTERISTICS 1st version 1000 s: 40.00) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 197.0...200.0 1000 s: (193.5...203.5)

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**BREAKAWAY** 

Note remarks

Test sheet : DAF 11,7 f1 : 16.02.90 Edition

Replaces : 7.7.89 : ISO-4113 Test oil

Combination no. : 0 401 876 338

Injection pump

Pump designation : PE6P120A320RS415-1

EP type number : 0 411 826 123

Governor

: RSV250...1100P5A508-Governor design.

: 0 421 833 321 Governer no.

Customer-spec. information : DAF Customer

: KS 238 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 650 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 650 Speed

Aneroid pressure h: 700

: 188.0...190.0 Del.quantity 1000 : (185.0...193.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 10.00

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

3rd rack travel in: 4.00 rpm : 1225...1255 Speed 4th rack travel in: 1400 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm: 250 Rack travel in mm: 6.0 Testing: : 100 Speed man Speed : 250 ngn Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 rpm : 600...700 Speed TORQUE CONTROL Torque control curve - 1st version t speed rpm : 1090 Rack travel in m: 11.00...11.20 1st speed : 650 2nd speed rpm Rack travel in m: 12.20...12.30 rpm : 760 3rd speed Rack travel in m: 11.60...11.80 4th speed rpm : 810 Rack travel in m: 11.20...11.40 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : 700 Pressure : 11.90...12.00 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 300 Rack travel in m: 11.30...11.40 3rd pressure hPa : 230 Rack travel in m: 10.40...10.70 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1130...1140 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 305.0...345.0 1000 s: (301.0...349.0) Rack travel in mm : 19.50...21.00 LOW TOLE rpm : 250 Speed Rack travel in mm : 6.40...6.60 Remarks:

1st version

Speed

Speed

Aneroid pressure h: 700

Aneroid pressure h: -

rpm

Del.quantity cm3/: 180.0...184.0

rpm : 600

: 1090

1000 s: (177.0...187.0)

Note remarks

Test sheet : ENA 10,1 g1 : 05.03.90 Edition : 1.12.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 339

Injection pump

Pump designation : PE6P110A820LS513-1 : 0 411 816 177 EP type number

Governor

Governor design. : RSV250...1000P0A532-

: 0 421 833 331 Governer no.

Customer-spec. information Customer : ENASA

: 95T1B0.MR4 Engine

: 176.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 6.5...6.7 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting  $\bar{x}$ : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 188.0...190.0 Del.quantity

1000 : (185.0...193.0)

: 4.00 Spread cm3 1000

: (7.50)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 12.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1085...1115 Speed 3rd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring : 250 rpm Rack travel in mm : 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 250 rpm Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 Speed rpm: 330...390 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.20...13.30 rpm : 450 2nd speed Rack travel in m: 13.20...13.30 3rd speed rpm : 300 Rack travel in m: 14.40...15.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1040...1050 Speed STARTING FUEL DELIVERY : 100 Speed rpm LOW IDLE : 250 Speed rpm Rack travel in mm : 5.90...6.10 Remarks: APPLICATION Navy

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Note remarks

Test sheet Edition : PEN 6,1 q 1 : 05.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 340

Injection pump

Pump designation : PE6P110A320RS499 : D 411 816 169 EP type number

Governor

: RSV325...1400P0A374-Governor design.

: 0 421 833 335 Governer no.

Customer-spec. information : PENTA Customer

: TAMD61 Engine

: 221.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.40...2.50 Prestroke mm

: (2.35...2.55)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 11.9...12.1

100 s: (11.6...12.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 325.02nd speed Rack travel in mm: 4.1...4.3

Del.quantity cm3/: 1.1...1.5

100 s: (0.9...1.7)

cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 900

: 119.0...121.0 Del.quantity 1000 : (116.0...124.0)

: 4.00 cm3

Spread 1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 120...128

Testing:

1st rack travel in: 10.10

Speed rpm : 1450...1460 2nd rack travel in: 4.00 Speed rpm : 1535...1565 4th rack travel in: 1630 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 83...91 Setting point w/out bumper spring Speed rpm: 325 Rack travel in mm: 3.7 : 325 Speed rom Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 Speed rpm : 450...510 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 900 : 11.00...11.20 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 8.50...8.70 2nd pressure hPa : 690 Rack travel in m: 10.80...10.90 3rd pressure hPa : 400 Rack travel in m: 8.90...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 1400 Del.quantity cm3/: 121.0...125.0 1000 s: (118.0...128.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 55.0...57.0 1000 s: (52.0...60.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.10...4.30 Del.quantity cm3/ : 11.0...15.0 1000 s: (9.0...17.0)

Spread cm3 : 3.00 1000 s: (6.00)

Remarks:

**APPLICATION** 

Navy

Note remarks

Test sheet : PEN 7,1 c 3 Edition : 15.03.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 744

Injection pump

Pump designation : PE6P110A320RS3147 EP type number : 0 411 816 743

Governor

Governor design. : RSV650...750P4A421-2

Governer no. : 0 421 833 336

Customer—spec. information Customer : PENTA

Engine : TD71AG

1st version kW : 127.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 14.0...14.2

100 s: (13.7...14.5)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 650.0 Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 140.0...142.0 1000 : (137.0...145.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 93...101

Testing:

1st rack travel in: 9.70

Speed rpm : 742...747

2nd rack travel in: 4.00

Speed rpm : 771...784

4th rack travel in: 940 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 87...95 Setting point w/out bumper spring

: 650 rpm Rack travel in mm: 4.2 : 650 Speed rpm

Rack travel in mm : 4.10...4.30

Rack travel in mm : 2.00 rpm : 635...695 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 155.0...175.0 1000 s: (151.0...179.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...21.0

1000 s: (14.5...23.5)

Spread cm3 : 6.00

1000 s: (9.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

APPLICATION

Generator set

Note remarks

: MB 11,0 k 6 : 15.03.90 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 759

Injection pump

Pump designation: PE6P110A320LS3814-11

: 0 411 816 756 EP type number

Governor

: RSV350...1050P0A531-Governor design.

: 0 421 833 271 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M421 Engine

1st version kW : 148.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per Values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

: 0-45-120-165-240-285 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 13.0...13.2

100 s: (12.7...13.4)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 350.0
Rack travel in mm : 8.2...8.4
Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.1)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed

: 130.0...132.0 Del.quantity 1000 : (127.5...134.5)

: 4.00 cm3 Spread

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 86...94

Testing:

1st rack travel in: 11.10 rpm : 1065...1075 Speed 2nd rack travel in: 4.00 Speed rpm : 1130...1150 4th rack travel in: 1350 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 8.3 : 350 Speed rpm Rack travel in mm : 8.20...8.40 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 112.0...116.0 1000 s: (109.0...119.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1065...1075 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks: Observe VDT-I-420/120

Note remarks

Test sheet : VOL 12,2 c Edition : 05.03.90 : 2.10.89 Replaces : ISO-4113 Test oil

Combination no. : D 401 876 769

Injection pump

Pump designation : PE6P120A320RS3206-2

EP type number : 0 411 826 784

Governor

Governor design: RSV250..1300P0A374-8

: D 421 833 320 Governer no.

Customer-spec. information Customer : VOLVO-TRUCK

Engine : TAMD71A PD

1st version kW : 280.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines · : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.5Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.40

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

: 215.5...217.5 Del.quantity

1000 : (212.5...220.5)

: 5.00 Spread cm3

(9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testina:

1st rack travel in: 0.10 rpm : 1335...1345 Speed 2nd rack travel in: 4.00 Speed rpm : 1415...1445 3rd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1530 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 76...84 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 4.7 Speed rpm Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 Speed rpm : 450...510 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1200 Pressure : 10.10...10.20 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 7.10...7.30 2nd pressure hPa : 360 Rack travel in m: 7.50...7.60 3rd pressure hPa : 780 Rack travel in m: 9.70...9.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 135.5...137.5 1000 s: (132.5...140.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 rpm : 1335...1345 Speed

Speed rpm : 100 Rack travel in mm : 7.10...7.30

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30
Del.quantity cm3/: 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 5.00

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90

1000 s: (7.00)

STARTING FUEL DELIVERY

Note remarks

Test sheet : LIE 12,0 a Edition : 16.02.90 : 13.12.89 Replaces Test oil : 150-4113

Combination no. : 0 401 876 770

Injection pump

Pump designation : PE6P110A320LS3852 EP type number : 0 411 816 768

Governor

Governor design. : RSV400...900P1A544

Governer no. : 0 421 833 326

Customer-spec. information Customer : LIEBHERR

: D 9306TB Engine

: 132.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-6-3-5-2-4

: 0-75-120-195-240-315 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 890

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 13.8...14.1

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.3...1.8 100 s: (1.0...2.0) Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 890 Speed

: 138.0...141.0 1000 : (135.5...143.5) Del.quantity

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 10.70

rpm : 930...940 Speed 2nd rack travel in: 4.00

rpm : 945...975 Speed

3rd rack travel in: 4.00 Speed rpm : 950...980 4th rack travel in: 1120 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 5.4 rpm : 400 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 450...510 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 890 Rack travel in m: 11.70...11.80 and speed rpm : 500 Rack travel in m: 11.70...11.90 2nd speed 3rd speed rpm : 420 Rack travel in m: 12.90...13.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 140.0...144.0 1000 s: (137.0...147.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 930...940 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE rpm : 400 Speed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 13.0...18.0 1000 s: (10.5...20.5) cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Note remarks

Test sheet : MB 11,0 q14 Edition : 04.05.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 773

Injection pump

Pump designation : PE6P120A320LS3815-13

EP type number : 0 411 826 782

Governor

Governor design. : RSV750...1050P0A820-

10

Governer no. : 0 421 833 339

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441A

1st version kW : 191.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.2...3.6

Del.quantity cm3/: 2.4...3.2

100 s: (2.1...3.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1030

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing:

1st rack travel in: 10.50 rpm : 1060...1070 Speed 2nd rack travel in: 4.00 rpm : 1090...1108 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring : 750 rom Rack travel in mm: 3.4 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 750
Rack travel in mm : 3.20...3.60
Rack travel in mm : 2.00 rpm : 755...815 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 900 Speed Del.quantity cm3/: 188.0...192.0 1000 s: (185.0...195.0) cm3 : 8.00 Spread 1000 s: (12.) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.50 rpm : 1060...0 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) Remarks: APPLICATION Combine-harvester

Note remarks

Test sheet : MB 14,6 t 1 : 06.04.90 Edition Replaces : 15.8.89 : ISO-4113 Test oil

Combination no. : 0 401 878 706

Injection pump

Pump designation : PE8P110A320LS3813-10

: 0 411 818 712 EP type number

Governor

Governor design. : RSV350...750P0A824-2

: 0 421 833 228 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M422 Engine

1st version kW : 173.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.6)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 350.0 2nd speed Rack travel in mm: 7.2...7.5

Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 142.0...144.0 Del.quantity 1000 : (139.5...146.5)

: 4.00

Spread cm3 1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 26...34

Testing:

1st rack travel in: 12.10 rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm : 780...793 4th rack travel in: 1200 Speed rpm: 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 12...20 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.3

Testing:

rpm : 100 Speed Minimum rack trave: 13.00 Speed rpm : 350 Rack travel in mm : 7.20...7.50

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.70 rpm : 1175...1185 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Observe VDT-I-420/120

Note remarks

Test sheet : MB 14,6 p 3
Edition : 02.02.90
Replaces : 16.5.88
Test oil : ISO-4113

Combination no. : 0 401 878 707

Injection pump

Pump designation : PE8P120A320LS3816-10

EP type number : 0 411 828 715

Governor

Governor design. : RSV350..750P0A824-3

Governer no. : 0 421 833 229

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M422A

1st version kW : 227.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3: 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 184.0...186.0

1000 : (181.0...189.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 26...30

Testing:

1st rack travel in: 8.30

rpm : 1210...1220 Speed

2nd rack travel in: 4.00

rpm : 1235...1250 Speed

4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.4

Testing:

: 100 Speed rpm Minimum rack trave: 19.50 rpm : 350 Speed

Rack travel in mm : 5.30...5.60

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180

Rack travel in m: 9.30...9.40

rpm : 975 2nd speed

Rack travel in m: 10.10...10.20

rpm : 1075 3rd speed

Rack travel in m: 9.60...9.80

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...190.0 1000 s: (166.0...194.0)

Remarks:

Observe VDT-I-420/120

Note remarks

Test sheet : LIE 16,0 a : 16.02.90 Edition : 13.12.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 878 714

Injection pump

Pump designation : PE8P110A520/4LS3853

: 0 411 818 720 EP type number

Governor

Governor design. : RSV400...900P1A544

Governer no. : 0 421 833 326

Customer-spec. information Customer : LIEBHERR

: D 9308 T Engine

: 260.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12 00

: 1-8-7-2-6-3-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 890

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 17.5...17.8

100 s: (17.2...18.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.3...1.8 100 s: (1.0...2.0)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 890 Speed

: 175.0...178.0 1000 : (172.5...180.5) Del.quantity

: 4.00 cm3

1000 : (7.50)

RATED SPEED

Spread

1st version

Control lever

position degrees: 87...95

Testing:

1st rack travel in: 12.80 Speed rpm : 930...940

2nd rack travel in: 4.00

rpm : 945...975 Speed 3rd rack travel in: 4.00 rpm : 950...980 Speed 4th rack travel in: 1120 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

: 100 Speed rpm rpm : 400 Speed Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

Speed rpm : 450...510 TORQUE CONTROL

Torque control curve - 1st version rpm : 890 1st speed Rack travel in m: 13.80...13.90 2nd speed rpm : 500 Rack travel in m: 13.80...14.00 3rd speed rpm : 420

Rack travel in m: 15.00...15.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 176.0...184.0 1000 s: (173.0...187.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.80 rpm : 930...940 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

LOW IDLE

rpm : 400 Rack travel in mm : 5.80...6.00

MD8

Del.quantity cm3/: 13.0...18.0 1000 s: (10.5...20.5)

cm3 : 4.50Spread 1000 s: (7.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 s : 02.05.90 Edition Replaces : ISO-4113 Test oil Combination no. : 0 401 878 715 Injection pump Pump designation : PE8P110A320LS3842-2 EP type number : 0 411 818 722 Governor : RSV650...1200P0A820-Governor design. : 0 421 833 341 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : 0M442 Engine : 213.0 1st version kW Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm: 9.00...12.00

Firing order: 8-7-2-6-3-5-: 0-45-90-135-180-225-Phasing : 270-315 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 1030 Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 13.7...13.9 100 s: (13.4...14.1) cm3 : 0.4Spread 100 s: (0.8) 2nd speed rpm : 350.0 Rack travel in mm : 5.5...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed : 1030 rpm : 137.0...139.0 Del.quantity : (134.5...141.5) 1000 : 4.00 cm3 Spread 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 86...94

Testing:

Speed

1st rack travel in: 12.30

rpm : 1090...1100

2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 68...72 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.7 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 5.50...6.00 Rack travel in mm : 2.00 Speed rpm : 350...370 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 128.0...132.0 1000 s: (125.0...135.0) cm3 : 6.00Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks: :

Note remarks

: MB 18,3 j 1 : 16.02.90 Test sheet Edition Replaces : 12.9.86 : ISO-4113 Test oil

Combination no. : 0 401 879 702

Injection pump

Pump designation : PE10P120A320LS3831 : 0 411 829 705 EP type number

Governor

Governor design. : RSV350...750P0A824-9

Governer no. : 0 421 833 235

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 423 LA Engine

: 309.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15) Rack travel in mm : 9.00...12.00

: 10-9-4-1-Firing order

- 6- 3- 5-

: 0-45-72-117-144-189-Phasing

216-261-288-333

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 10

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

cm3 : 0.5Spread

100 s: (0.8)

2nd speed rpm : 350.0 Rack travel in mm : 4.8...5.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 190.0...192.0 Del.quantity 1000 : (187.0...195.0)

: 5.00 cm3 Spread

1000 : (8.03)

RATED SPEED

1st version

Control lever

position degrees: 24...32

Testina:

1st rack travel in: 10.70 rpm : 750...755 2nd rack travel in: 4.00 rpm : 775...788

Speed

4th rack travel in: 900

rpm : 0.30...1.70 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 4.9 Speed rpm : 350 Rack travel in mm : 4.80...5.00

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.40 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...190.0 1000 s: (166.0...194.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

: MB 18,3 q : 06.04.90 Test sheet Edition

Replaces Test oil

: ISO-4113

: 0 401 879 707 Combination no.

Injection pump

Pump designation : PE10P110A320LS3856 : 0 411 819 711 EP type number

Governor

: RSV675...1050P0A823-Governor design.

: 0 421 833 338 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 443

: 242.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 10- 9- 4- 1- - 6- 3- 5-8- 7 2 Firing order

Phasina : 0-45-72-117-144-189-

Phasing : 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

rpm: 1030 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 12.3...12.5

100 s: (12.0...12.7)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 675.0 2nd speed

Rack travel in mm : 5.4...5.7 Del.quantity cm3/ : 1.2...2.0 100 s: (0.9...2.2)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 123.0...125.0 1000 : (120.5...127.5)

cm3 : 4.00 Spread

1000 : (8.00)

RATED SPEED

1st version Control lever

position degrees: 80...88

Testing: 1st rack travel in: 11.20 rpm : 1165...1175 Speed 2nd rack travel in: 4.00 Speed rpm : 1210...1225 4th rack travel in: 1200 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 675 Rack travel in mm : 5.5 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 675 rom Rack travel in mm : 5.40...5.70 Rack travel in mm: 2.00 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 109.0...113.0 1000 s: (106.0...116.0) cm3 : 6.00 Spread 1000 s: (9.) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1165...1175 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

Test sheet : MB 18,3 a 1 Edition : 05.03.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 879 707

Injection pump

Pump designation : PE10P110A320LS3856

EP type number : 0 411 819 711

Governor

: RSV750...1050P0A825-Governor design.

: 0 421 833 338 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 423

: 242.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 10-9-4-1-Firing order

- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-

: 216-261-288-333 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 12.5...12.7

100 s: (12.2...12.9)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 750.02nd speed

Rack travel in mm: 5.5...5.8 Del.quantity cm3/: 1.2...2.0

100 s: (0.9...2.2)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed

Del.quantity : 125.0...127.0

1000 : (122.5...129.5)

: 4.00 Spread cm3

: (8.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 12.20

rpm : 1165...1175 Speed

2nd rack travel in: 4.00 rpm : 1210...1225 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 750 Rack travel in mm: 5.6 Testing: Speed : 100 rpm Minimum rack trave: 19.50 rpm : 750 Speed Rack travel in mm : 5.50...5.80 Rack travel in mm : 2.00 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 112.0...116.0 1000 s: (109.0...119.0) cm3 : 6.00 Spread 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1165...1175 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

: MAN 11,9a15 Test sheet : 31.07.87 : 12.9.86 Edition Replaces Test oil : ISO-4113

: 0 402 036 043 Combination no.

Injection pump

Pump designation : PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQ300/1100PA658-18

Governer no. : 0 421 801 322

Customer-spec. information : MAN Customer

: D2866LFZ/290 Engine

: 213.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzie holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm:7501st speed

Rack travel in mm : 10.30...10.40

Del.guantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750 Aneroid pressure h: 1000

: 183.0...185.0 Del.quantity 1000 : (180.0...188.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm : 20.0

Testing:

Aneroid pressure h: 1000 1st rack travel in: 8.70 rpm : 1145...1160 Speed rpm : 1100 Del.quantity cm3/: 178.0...182.0 1000 s: (175.0...185.0) Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed Aneroid pressure h: 1000 4th rack travel in: 1300 rpm : 0.00...1.00Speed rpm : 650 Speed Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0) Aneroid pressure h: 160 LOW IDLE 1 Setting point w/out bumper spring : 300 rpm : 500 Speed rpm Del.quantity cm3/: 157.0...169.0 Rack travel in mm: 4.9 1000 s: (154.0...172.0) Aneroid pressure h: -Testing: Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 rpm : 100 Speed Minimum rack trave: 6.40 : 300 1000 s: (129.0...137.0) rom Rack travel in mm : 4.80...5.00 Rack travel in mm : 2.00 Speed rpm::340...380 BREAKAWAY 1st version TORQUE CONTROL 1mm rack travel less than Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 750 full load rack tr: 8.70 Rack travel in m: 10.60...10.70 d speed rpm : 1100 rpm : 1145...1160 Speed 2nd speed Rack travel in m: 9.70...9.80 STARTING FUEL DELIVERY rpm : 875 3rd speed Rack travel in m: 10.40...10.60 rpm : 100 4th speed rpm : 950 Speed Del.quantity cm3/: 225.0...245.0 Rack travel in m: 9.90...10.20 1000 s: (221.0...249.0) Aneroid/Altitude LOW IDLE Compensator Test rpm : 300 Speed Rack travel in mm : 4.80...5.00 1st version Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Settina Speed : 500 rpm hPa : 1000 Spread cm3 : 8.00Pressure 1000 s: (12.00) Rack travel mm : 10.30...10.40 Measurement Remarks: 1/min: 500 : MAN-NR. 2-7713 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 160 Rack travel in m: 9.80...10.20 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

M18

Note remarks

Test sheet : MAN 11,9a41 Edition : 15.12.89

Replaces

: ISO-4113 Test oil

: 0 402 036 044 Combination no.

Injection pump

Pump designation: PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQ300/1100PA658-19

: 0 421 801 323 Governer no.

Customer-spec. information

Customer : MAN

: D2866LFZ Engine

1st version kW : 243.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Lenath mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm : 750 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Aneroid pressure h: 1000

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rom Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1185...1215 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 4.7 Speed Testing: rpm : 100 Speed Minimum rack trave: 6.20 rpm : 300 Rack travel in mm : 4.60...4.30 Rack travel in mm : 2.00 Speed : 340...380 rpm TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 11.70...11.80 rpm : 750 2nd speed Speed Rack travel in m: 11.90...12.20 3rd speed rpm : 875 Rack travel in m: 11.80...12.00 : 950 4th speed rpm Rack travel in m: 11.20...11.50 Speed Aneroid/Altitude Compensator Test LOW IDLE 1st version Speed Setting Speed : 500 rpm hPa : 1000 Pressure Rack travel mm : 11.30...11.40 Spread Measurement  $1/\min : 500$ Remarks: Speed 1st pressure hPa :-Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 280 Rack travel in m: 10.50...10.90 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

: 1100

rpm

Del.quantity cm3/: 203.0...207.0 1000 s: (200.0...210.0) Aneroid pressure h: 1000 rpm : 650 Del.quantity cm3/: 208.0...214.0 1000 s: (205.0...217.0) Aneroid pressure h: 280 rpm : 500 Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 rpm : 1145...1160

STARTING FUEL DELIVERY

: 100 rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0)

rpm : 300 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) cm3 : 8.00

1000 s: (12.00)

: MAN-NR. 2-7756

Speed

Note remarks

: MAN 11,9 j Test sheet : 23.03.90 Edition : 11.5.89 Replaces Test oil : ISO-4113

: 0 402 036 726 Combination no.

Injection pump

Pump designation : PES6P120A720/3LS3205

EP type number : 0 412 026 729

Governor

Governor design. : RQ300/1100PA813-2 Governer no. : 0 421 801 416

Customer-spec, information Customer : MAN

: D2866LX Engine

: 265.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 650 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1200

: 242.0...244.0 Del.quantity 1000 : (239.0...247.0) cm3 : 5.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

rpm : 650 Speed Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 Speed rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 4.2 Testina: Speed : 100 rpm Minimum rack trave: 5.70 rpm : 300 Speed Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 : 330...370 Speed rom TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 13.00...13.10 rpm : 700 2nd speed Rack travel in m: 13.50...13.70 Aneroid/Altitude Compensator Test 1st version Settina rpm : 500 hPa : 1200 Speed rpm Pressure : 13.30...13.40 Rack travel mm Measurement 1/min: 500 beed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 110 Rack travel in m: 10.20...10.30 3rd pressure hPa : 470 Rack travel in m: 11.90...12.30 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 1100 Del.quantity cm3/: 230.0...236.0

1000 s: (227.0...239.0)

Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1145...1160 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.10...4.30 Del.quartity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MAN-NR. 2-7889

Aneroid pressure h: -

Note remarks

Test sheet Edition Replaces

: MAN 11,9 k3 : 23.03.90 : 15.8.89

Test oil

: ISO-4113

Combination no.

: 0 402 036 727

Injection pump

Pump designation : PES6P120A720/3LS3205

EP type number

: 0 412 026 729

Governor

Governor design. : RQV300...1100PA876-1

Governer no.

: 0 421 813 670

Customer-spec. information : MAN Customer

Engine

: D2866LX

1st version kW

: 265.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm

: 450 2nd speed rpm

3.10...3.50 travel mm

: 900 3rd speed man

: 6.00...6.40 travel mm

: 1100 4th speed rpm

: 7.70...7.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 12.00

Speed rpm: 1140...1150 2nd rack travel in: 4.00

rpm : 1250...1280 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Testina:

Speed rpm Minimum rack trave: 5.70 rpm : 300 Speed

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 300...400 Speed

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 13.00...13.10

rpm : 700 2nd speed

Rack travel in m: 13.30...13.40

rpm : 1000 3rd speed

Rack travel in m: 13.10...13.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1200 Pressure

: 13.30...13.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 110

Rack travel in m: 10.20...10.30

3rd pressure hPa : 470

Rack travel in m: 11.90...12.30

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 1100 Speed rpm

Del.quantity cm3/: 231.0...235.0 1000 s: (228.0...238.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

rpm : 1140...1150 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

Note remarks

: MAN 11,9 j2 Test sheet Edition : 30.03.90 : 14.7.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 036 729

Injection pump

Pump designation : PES6P120A720/3LS3205

EP type number : 0 412 026 729

Governor

Governor design. : RQ300/1100PA813-7

: 0 421 801 474 Governer no.

Customer-spec, information : MAN Customer

: D2866LXUH Engine

1st version kW : 273.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 650 Speed

Rack travel in mm : 14.70...16.30

FULL LOAD DELTY. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200

: 242.0...244.0 Del.quantity

1000 : (239.0...247.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm Rack travel in mm : 15.5

Testina:

1st rack travel in: 12.00

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 4.4 Testing: Speed rpm : 100 Minimum rack trave: 5.90 rpm : 300Speed Rack travel in mm : 4.30...4.50 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 13.00...13.10 rpm : 700 2nd speed Rack travel in m: 14.30...14.40 3rd speed rpm : 885 Rack travel in m: 13.60...13.90 4th speed rpm : 935 Rack travel in m: 13.30...13.60 Aneroid/Altitude Compensator Test 1st version Settina Speed rom : 500 Pressure hPa : 1200 : 13.50...13.60 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 9.30...9.50 2nd pressure hPa : 190 Rack travel in m: 9.70...9.80 3rd pressure hPa : 520 Rack travel in m: 11.80...12.10 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

Speed : 1100 rom Del.quantity cm3/: 230.0...236.0 1000 s: (227.0...239.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1145...1160 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 230.0...250.0 1000 s: (226.0...254.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 2-7946

Aneroid pressure h: 1200

Note remarks

Test sheet : MAN 11,9 k2 Edition : 16.02.90

Replaces

: ISO-4113 Test oil

: 0 402 036 731 Combination no.

Injection pump

Pump designation : PES6P12OA720/3LS3205

: 0 412 026 729 EP type number

Governor

Governor design.: RQV300...950PA876-3

: 0 421 313 807 Governer no.

Customer-spec. information

Customer : MAN

Engine : 02866LXF/339

: 250.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 700 1st speed

Fack travel in mm : 12.90...13.00

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5 Scread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 4.1...4.3

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.40 travel mm 008: mar 2nd speed

travel mm : 5.00...5.40

rpm : 1000 3rd speed

: 7.80...8.20 travel mm

rpm : 1100 4th speed

: 9.10...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1200

Del.quantity : 230.0...235.0)

رَسِم : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 295...301

Testina:

1st rack travel in: 11.70 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1070...1100 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 258...266

Testina:

Speed : 200 rom Minimum rack trave: 6.00 : 300 Speed man

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 300...400 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 12.70...12.80

2nd speed rpm : 700

Rack travel in m: 12.90...13.20

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : 1200

Rack travel mm : 12.90...13.00

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 110

Rack travel in m: 10.20...10.30

3rd pressure hPa : 470

Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rom : 950 Speed

Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 990...1000 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 210.0...230.0

1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN-NR, 2-7942

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: MAN 11,9 i3 Test sheet : 16.02.90 Edition : 9.11.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 036 732

Injection pump

Pump designation : PES6P120A720/3LS3205

EP type number : 0 412 026 729

Governor

Governor design. : RQ300/950PA813-10

Governer no. : 0 421 801 493

Customer-spec, information Customer : MAN

Engine : D2866LXF/339

: 250.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 650 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

: 230.0...232.0 Del.quantity 1000 : (227.0...235.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

: 650 rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.70

rpm : 995...1010 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 4th rack travel in: 1150 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 4.2 Testina: Speed : 100 rpm Minimum rack trave: 5.70 Speed rpm: 300 Rack travel in mm: 4.10...4.30 Rack travel in mm : 2.00 Speed rpm : 350...390 TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 12.70...12.80 2nd speed :rpm : 700 Rack travel in m: 13.20...13.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : 1200 Rack travel mm : 12.90...13.00 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 110 Rack travel in m: 10.20...10.30 3rd pressure hPa : 470 Rack travel in m: 11.90...12.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 950 Speed rpm Del.quantity cm3/: 228.0...232.0 1000 s: (225.0...235.0)

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rpm : 995...1010

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Remarks:

: MAN-NR. 2-7962

NO2

Aneroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Note remarks : 6-2-4-1-5-3 Firing order Test sheet : MAN 11,9 p : 30.03.90 Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Test oil Phasing : 0.50 (0.75) : 0 402 036 733 Tolerance + - ° Combination no. Time to cyl. no. : 6 Injection pump Pump designation : PES6P120A720/3LS3247 : 0 412 026 735 BASIC SETTING EP type number Governor Governor design. : RQV300...1100PA876-4 1st speed rpm: 700 : 0 421 813 851 Governer no. Rack travel in mm : 13.50...13.60 Customer-spec. information Del.quantity cm3/: 24.2...24.4 Customer : MAN : D2866LXF/A00 100 s: (23.9...24.7) Engine : 273.0 cm3 : 0.51st version kW Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 4.2...4.6 Del.quantity cm3/: 1.7...2.3 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 3001st speed : 1.00...1.40 travel mm **Openina** : 500 pressure, bar : 207...210 2nd speed rpm 2.90...3.50 travel mm : 800 3rd speed Orifice plate rom 5.10...5.50 travel mm diameter mm : 0,8 1100 4th speed rpm . 7.70...7.90 travel mm Test Lines : 1 680 750 067 GUIDE SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 rpm : 1135 : 6.00x1.50x1000 x Length mm Speed Rack travel in mm : 15.20...17.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_ 1st version Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity

: 242.0...244.0

1000 : (239.0...247.0)

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 12.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1235...1265 4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 258...266 Testing: : 200 Speed rpm Minimum rack trave: 5.90 : 300 rpm Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 320...430 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1200 Pressure : 13.50...13.60 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 110 Rack travel in m: 9.80...10.00 3rd pressure hPa : 470 Rack travel in m: 11.60...12.00 START CUT-OUT

1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS rom : 1100

1st version Aneroid pressure h: 1200 Speed

Del.quantity cm3/: 230.0...236.0 1000 s: (227.0...239.0) : 700 Speed rpm Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0

1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.20...4.60 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

NO4

Note remarks

Test sheet : MAN 11,9 q
Edition : 30.03.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 036 734

Injection pump

Pump designation : PES6P120A720/3LS3247

EP type number : 0 412 026 735

Governor

Governor design. : RQ300/1100PA813-12

Governer no. : 0 421 801 518

Customer—spec. information Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 14.50...15.50

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.2...4.6
Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 300

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 242.0...244.0 1000 : (239.0...247.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point: : 600 Speed rom Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.00 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 4.4 Testing: Speed rom : 200 Minimum rack trave: 5.90 rpm : 300 Rack travel in mm : 4.30...4.50 TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 700 Rack travel in m: 13.70...13.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1200 Pressure : 13.50...13.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 110 Rack travel in m: 9.80...10.00 3rd pressure hPa : 470 Rack travel in m: 11.60...12.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Speed rpm : 1100 Del.quantity cm3/ : 230.0...236.0 1000 s: (227.0...239.0) : 700 Speed rpm Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1145...1160 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.20...4.60 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 2-7889

1st version

Aneroid pressure h: 1200

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00 Note remarks : 6-2-4-1-5-3 Firing order Test sheet : MAN 11,9 r Edition : 12.04.90 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Tolerance + - ° : 0.50 (0.75) Combination no. : 0 402 036 735 Time to cyl. no. : 6 Injection pump Pump designation : PES6P120A720/3LS3250 : 0 412 026 736 BASIC SETTING EP type number Governor Governor design. : RQ300/1100PA813-2 1st speed rpm: 700 : 0 421 801 416 Governer no. Rack travel in mm : 13.30...13.40 Customer-spec. information Del.quantity cm3/: 24.2...24.4 Customer : MAN 100 s: (23.9...24.7) Engine : D2866LX cm3 : 0.51st version kW : 265.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 1.7...2.3 Test oil : 38...42 inlet temp. °C 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 rpm : 650 assembly Speed Rack travel in mm : 19.20...20.80 Openina : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar 1st version Orifice plate : 0,8 Speed rpm : 700 diameter mm Aneroid pressure h: 1200 : 242.0...244.0 Del.quantity : (239.0...247.0) 1000 : 1 680 750 067 Test lines : 5.00 Spread cm3 1000 : (9.00) Outside diameter x Wall thickness : 6.00x1.50x1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. : 650 Speed per values rom Rack travel in mm : 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27

1st rack travel in: 12.00

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rom Rack travel in mm: 4.2 Testing: Speed rpm : 100 Minimum rack trave: 5.70 : 300 rpm Rack travel in mm : 4.10...4.30 Rack travel in mm: 2.00 Speed rpm : 330...370 TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 700 Rack travel in m: 13.50...13.70 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 1200 Speed rom Pressure : 13.30...13.40 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.80...10.00 2nd pressure hPa : 110 Rack travel in m: 10.20...10.30 3rd pressure hPa : 470 Rack travel in m: 11.90...12.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 1100 Del.quantity cm3/: 230.0...236.0

1000 s: (227.0...239.0)

rpm : 500 Speed Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MAN-NR. 2-7889

Aneroid pressure h: -

## BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 11,1 g : 20.3.90 Edition Replaces : ISO-4113 Test oil Combination no. : 0 402 046 097 Injection pump Pump designation : PES6P110A720RS3009 Governor Governor design. : RQV275...1050PA262KR Cust. part no. Customer-spec. information Customer : MACK : ENDT 676 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 40 Inlet press., bar: 0.2 Opening : 280...283 pressure, bar Test lines : 9 681 230 710 Outside diameter x Wall thickness : 6.35X1.70X914.40 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_ BEGINNING OF DELIVERY : 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180 -240-300 Phasina Tolerance + - ° : 0.50 (0.75) BASIC SETTING

rpm: 1000

```
Rack travel in mm : 12.00...12.10
Del.quantity cm3/: 13.2...13.8
             100 s: (-)
             cm3 : 0.3
Spread
             100 s: (-)
             rpm : 275
2nd speed
Del.quantity cm3/: 1.4...2.4
             100 s: (-)
GUIDE SLEEVE POSITION
Control-lever position
            Degree: -1
             rpm : 1050
Speed
Rack travel in mm : 15.00...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
             rpm : 1000
Speed
                 : 168.0...170.0
Del.quantity
            1000 : (166.0...172.0)
RATED SPEED
1st version
Control Lever
 position degrees: 62...70
Testina:
1st rack travel in: 16.40
  Speed
            rpm : 1040...1060
2nd rack travel in: 11.90
            rpm : 1085...1115
  Speed
3rd rack travel in: 4.00...9.60
            rpm : 1150
  Speed
4th rack travel in: 1180
            rpm : 0.00...7.00
  Speed
5th rack travel in: 1260
  Speed
            rom
LOW IDLE 1
Control lever
position degrees: 6...14
Testina:
Speed
                  : 200
            rpm
Minimum rack trave: 6.00
                  : 300
            rpm
Rack travel in mm : 3.20...4.40
Rack travel in mm: 3.00
Speed rpm: 385...415
Speed rpm: 500
Maximum rack trave: 2.70
                  : 680
Speed
            rpm
```

1st speed

Rack travel in mm: -

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.70...13.80

2nd speed rpm : 800

Rack travel in m: 13.90...14.00

3rd speed rpm : 600

Rack travel in m: 14.60...14.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rom

Del.quantity cm3/: 182.0...189.0

1000 s: (180.0...191.0)

rpm : 600 Speed

Del.quantity cm3/: 214.0...219.0 1000 s: (212.0...221.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...175.0

1000 s: (-)

LOW IDLE

Speed rpm : 275 Del.quantity cm3/ : 14.0...24.0

1000 s: (-)

Remarks:

: MACK # 313 CC 597 P7

See VDT-I-MAC 002

PLE dimension = 0.670'' - 0.744''

The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder

assembly

Note remarks

: MAC 11,1 g1 : 20.3.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 046 105 Combination no.

Injection pump

Pump designation : PES6P110A720RS3009

Governor

: RQV275...1050PA262KR Governor design.

Cust. part no. ; \*

Customer-spec. information Customer : MACK

: ENDT 676 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40

Inlet press., bar: 0.2

Opening

pressure, bar : 300...303

: 9 681 230 710 Test lines

Outside diameter x Wall thickness

: 6.35x1.70x914.40 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75

BASIC SETTING

1st speed rpm: 1000 Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 13.2...13.8

100 s: -

cm3 : 0.3Spread

100 s: (-)

2nd speed rpm : 275 Del.quantity cm3/: 1.4...2.4

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.00...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 168.0...170.0 Del.quantity

1000 : (166.0...172.0)

RATED SPEED

1st version

Control Lever

position degrees: 62...70

Testing:

1st rack travel in: 16.40

rpm : 1040...1060 Speed

2nd rack travel in: 11.90

rpm : 1085...1115 Speed

3rd rack travel in: 4.00...9.60

rpm : 1150 Speed 4th rack travel in: 1180

Speed rpm: 0.00...7.00 5th rack travel in: 1260

Speed rpm

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

: 200 Speed rpm Minimum rack trave: 6.00

: 300 Speed rpm

Rack travel in mm : 3.20...4.40

Rack travel in mm : 3.00 Speed rpm : 385...415

Speed rpm: 500
Maximum rack trave: 2.70

Speed rpm Rack travel in mm : -

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 13.70...13.80

2nd speed rpm : 800

Rack travel in m: 13.90...14.00

3rd speed rpm : 600

Rack travel in m: 14.60...14.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 182.0...189.0

1000 s: (180.0...191.0)

rpm : 600 Speed

Del.quantity cm3/: 214.0...219.0 1000 s: (212.0...221.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: ?

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...175.0 1000 s: (-)

LOW IDLE

rpm : 275 Speed

Del.quantity cm3/: 14.0...24.0 1000 s: (-)

Remarks:

: MACK # 313 CC 597 P7

See VDT-I-MAC 002

PLE dimension = 0.670'' - 0.744''

The test specifications apply to testing of the injection pump assembly with the genuine engine/nozzle-and-holder

assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS 1st speed rpm: 1000 Rack travel in mm : 12.00...12.10 Note remarks : MAC 11,1 g2 : 22.3.90 Del.quantity cm3/: 13.5...14.1 Test sheet Edition 100 s: (-) Replaces Test oil : ISO-4113 Spread cm3 : 0.4Combination no. : 0 402 046 127 100 s: (-) Injection pump 2nd speed rpm : 275
Del.quantity cm3/: 1.2...2.2 Pump designation : PES6P110A720RS3009 Governor 100 s: (-) : RQV300/600...1050PA Governor design. 300KR GUIDE SLEEVE POSITION Control-lever position Cust. part no. Degree: -1 rpm : 1070 Customer-spec. information Customer Rack travel in mm : 15.00...17.60 : MACK FULL LOAD DELIV. AT FULL LOAD STOP Engine : ENDT (B) 676 TEST BENCH REQUIREMENTS 1st version rpm : 1000 Speed : 162.5...165.5 Del.quantity Test oil inlet temp. °C : 40 1000 : (160.5...167.5) Inlet press., bar: 1.5 RATED SPEED 1st version Openina ( : 300...303 Control lever pressure, bar position degrees: 62...70 Test lines : 9 681 230 710 Testina: 1st rack travel in: 16.40 Speed rpm : 1060...1080 2nd rack travel in: 9.30 Outside diameter x Wall thickness rpm : 1135...1165 : 6.35x1.70x914.40 x Length mm Speed 3rd rack travel in: 0.00...7.80 rpm : 1200 (A) Injection pump satting values Speed 4th rack travel in: 1280 Insp. values in parentheses Set equal delivery quant. Speed rpm : per values \_\_\_\_ LOW IDLE 1 Control lever BEGINNING OF DELIVERY position degrees: 8...16 Prestroke mm : 2.80...2.90 : (2.75...2.95) Testing: Rack travel in mm : 9.00...12.00 Speed rpm : 1-5-3-6-2-4 Minimum rack trave: 6.30 Firing order : 300 rpm Rack travel in mm : 4.00...6.50

: 0-60-120-180-240-300

: 0.50 (0.75)

Rack travel in mm : 2.10

Maximum rack trave: 1.20

Rack travel in mm : -

rom

rpm

Speed

Speed

: 345...375

: 560

rpm : 740

Phasing

Phasing

BASIC SETTING

TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.70...13.80 rpm : 900 2nd speed Rack travel in m: 13.80...13.90 : 800 3rd speed rpm Rack travel in m: 14.10...14.20 4th speed : 700 rpm Rack travel in m: 14.60...14.70 : 500 5th speed rpm Rack travel in m: 15.00...15.10 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 600 rpm Del.quantity cm3/: 220.0...224.0 1000 s: (218.0...226.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: ? rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 275 Speed Del.quantity cm3/: 140.0...175.0 1000 s: (-) LOW IDLE Speed rpm : 275 Del.quantity cm3/: 14.0...24.0 1000 s: (-) Remarks: : MACK # 313 CC 5104 P See VDT-I-MAC 002 PLE dimension = 0.670" - 0.744" The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS
Note remarks

Test sheet : RVI 12,0 c Edition : 06.04.90 Replaces : 10.2.89 Test oil : ISO-4113

Combination no. : 0 402 046 219

Injection pump

Pump designation : PES6P120A320RS426 EP type number : 0 412 026 039

Governor

Governor design. : RQV250...1100PA570

Governer no. : 0 421 813 295

Customer-spec. information Customer : RVI

Engine : MIDS 063540

1st version kW : 195.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 1.9...2.5 100 s: (1.6...2.8)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.50...1.60

2nd speed rpm : 800

travel mm : 4.70...4.90 3rd speed rpm : 1100

travel mm : 6.80...7.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1270

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 650 Aneroid pressure h: 700

Del.quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 57...65

Testing:

1st rack travel in: 8.10

Speed rpm : 1160...1170

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 5...13

Testing:

Speed : 200 rpm Minimum rack trave: 5.70 Speed rpm : 250

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 275...400 Speed

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed rpm : 650

Rack travel in m: 10.30...10.40 ad speed rpm : 1100

2nd speed

Rack travel in m: 9.00...9.20

3rd speed rpm : 1020

Rack travel in m: 9.30...9.50

rpm : 890 4th speed

Rack travel in m: 9.90...10.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed 500 rpm hPa : 700 Pressure

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.5000

2nd pressure hPa : 290

Rack travel in m: 9.90...10.00

3rd pressure hPa : 245

Rack travel in m: 8.90...9.10

START CUT-OUT

1/min: 170 (190) Speed

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## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 : 1100 Speed rpm

Del.quantity cm3/: 164.0...170.0 1000 s: (161.0...173.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

## **BREAKAWAY**

1st version

1mm rack travel less than

full load rack tr: 8.10

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0 1000 s: (121.0...149.0)

LOW IDLE

Speed rpm

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 19.0...25.0

1000 s: (16.0...28.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 12° cam angle

after start of delivery cyl. 1.

Note remarks

Test sheet : RVI 9,8 a 3
Edition : 01.02.90
Replaces : 1.9.89
Test oil : ISO-4113

Combination no. : 0 402 046 300

Injection pump

Pump designation : PZS6P12OA32ORS419 EP type number : 0 412 026 037

Governor

Governor design. : RQV275...1100PA495-5

Governer no. : 0 421 813 446

Customer—spec. information Customer : RVI

Engine: MIDR 062045

1st version kW : 191.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm: 275.0

Rack travel in mm : 4.60...5.00 Del.quantity cm3/ : 1.9...2.5

100 s: (1.6...2.8)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20 2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 850 travel mm : 6.10...6.30

4th speed rpm : 1100

travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100 Aneroid pressure h: 700

Del.quantity : 162.0...164.0

1000 : (159.0...167.0) cm3 : 5.00

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 8.00

rpm : 1170...1180 Speed

2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1350 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

Speed : 200 rpm Minimum rack trave: 6.50 : 275 rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 285...400 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm Pressure hPa : 700

Rack travel mm : 9.00...9.10

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 7.80...8.00

2nd pressure hPa : 220

Rack travel in m: 8.60...8.70

3rd pressure hPa : 195

Rack travel in m: 8.10...8.30

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 700

Del.quantity cm3/: 150.0...156.0 1000 s: (147.0...159.0)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 102.0...104.0

1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00

rpm : 1170...1180 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.60...5.00 Del.quantity cm3/: 19.0...25.0 1000 s: (16.0...28.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

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Note remarks

Test sheet : RVI 8,8 d 5 : 06.04.90 Edition : 29.3.89 Replaces -Test oil : ISO-4113

Combination no. : 0 402 046 328

Injection pump

Pump designation : PES6P120A320RS419-2 : 0 412 026 048

EP type number

Governor

Governor design. : RQ275/950PA753-1 : 0 421 801 377 Governer no.

Customer-spec. information Customer : RVI

: MIDS/PS062045 FC Engine

: 144.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.70...8.80

Del.quantity cm3/: 11.9...12.1

100 s: (11.6...12.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 525 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed Aneroid pressure h: 700

: 119.0...121.0 Del.quantity

1000 : (116.0...124.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 525 Speed Rack travel in mm : 20.0

Testina:

1st rack travel in: 7.20

rpm : 1015...1030

2nd rack travel in: 4.00

rpm : 1150...1080 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

: 275 rpm Rack travel in mm: 3.50

Testina:

: 200 Speed rpm Minimum rack trave: 5.30 Speed rpm: 275 Rack travel in mm: 3.40...3.60 Rack travel in mm: 2.00

: 300...340 Speed rom

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

rpm : 500 1st speed

Rack travel in m: 8.70...8.80

rpm : 950 2nd speed

Rack travel in m: 8.00...8.20

3rd speed rpm : 750

Rack travel in m: 8.30...8.50

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 700 Pressure

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.90...8.00

2nd pressure hPa : 245

Rack travel in m: 8.50...8.60

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 950

Del.quantity cm3/: 139.0...143.0

1000 s: (136.0...146.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 104.0...106.0

1000 s: (101.0...109.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 7.20

rpm : 1015...1030 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 3.40...3.60

Remarks:

Start-of-delivery mark 9.5° cam angle after start of delivery cyl. 1

APPLICATION

**Omnibus** 

Note remarks

Test sheet : RVI 8,8 d 6 : 23.03.90 : 2.10.89 Edition Replaces

: ISO-4113 Test oil

: 0 402 046 329 Combination no.

Injection pump

Pump designation : PES6P120A320RS419-2

: 0 412 026 048 EP type number

Governor

Governor design. : RQ275/950PA843 : 0 421 801 378 Governer no.

Customer-spec. information Customer : RVI

: MIDS/PS062045D/A Engine

: 129.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values a parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.00...8.10

Del.quantity cm3/: 10.5...10.7

100 s: (10.2...11.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 3.5...3.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 525 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

: 105.0...107.0 Del.quantity

1000 : (102.0...110.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 6.50

rpm : 1015...1030 Speed

2nd rack travel in: 4.00

rpm : 1040...1070 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 3.6

Testing:

: 200 Speed rpm Minimum rack trave: 5.20 : 275 rpm

Rack travel in mm : 3.50...3.70 Rack travel in mm : 2.00

: 300...340 Speed rpm

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 500 1st speed

Rack travel in m: 8.00...8.10

: 950 2nd speed rpm

Rack travel in m: 7.40...7.50

3rd speed rpm : 775

Rack travel in m: 7.60...7.80

START CUT-OUT

1/min : 210 (230) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 950 Speed

Del.quantity cm3/: 126.0...130.0 1000 s: (123.0...133.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 6.50

Speed rpm : 1015...1030

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 3.50...3.70

Remarks:

N22

Start-of-delivery mark 9.5° cam angle after start of delivery cyl. 1

**APPLICATION** 

Omnibus

Note remarks

Test sheet : RVI 8,8 m Edition : 16.02.90 : 5.8.88 Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 334

Injection pump

Pump designation : PES6P120A320RS515 : 0 412 026 053 EP type number

Governor

Governor design. : RQV300...1150PA527K

: D 421 815 164 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDR 062030B

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 14.6...14.8

100 s: (14.3...15.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 600.02nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.8...2.4 100 s: (1.5...2.7)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed travel mm

: 1.70...2.10 rpm : 900 2nd speed : 5.80...6.20 rpm : 1150 travel mm 3rd speed

travel mm : 7.40...7.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 146.0...148.0 Del.quantity 1000 : (143.0...151.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 9.20

Speed rpm : 1235...1245

2nd rack travel in: 4.00

rpm : 1305...1335 Speed

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Testing:

Speed rom : 200 Minimum rack trave: 6.30 Speed rpm : 300

Rack travel in mm : 4.70...5.00

CONSTANT REGULATION

rpm : 320...440 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.20...10.30 od speed rpm : 750

2nd speed

Rack travel in m: 9.20...9.30

rpm : 500 3rd speed

Rack travel in m: 8.60...8.80

4th speed rpm : 350

Rack travel in m: 8.40...8.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 123.0...129.0

1000 s: (120.0...132.0)

rpm : 500 Speed

Del.quantity cm3/: 69.0...75.0

1000 s: (66.0...78.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: -1.00

rpm : 1235...1245 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : -5.20...-5.60

Del.quantity cm3/: 13.0...19.0 1000 s: (10.0...22.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet

: MAN 11,9 o

Edition

: 12.02.90

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 046 339

Injection pump

Pump designation : PES6P110A720LS524

EP type number

: 0 412 016 073

Governor

Governor design. : RQ750PA661-1 Governer no.

: 0 421 801 330

Customer-spec. information

Customer

: MAN

Engine

: D2866E

1st version kW

: 125.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 14.3...14.6

100 s: (14.0...14.8)

Spread

cm3 : 0.4

100 s: (0.7)

rpm : 250.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.5...2.0

100 s: (1.2...2.2)

Spread

2nd speed

cm3 : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 143.0...146.0

1000 : (140.5...148.5)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.40

rpm : 750...755 Speed

2nd rack travel in: 4.00

rpm : 800...813

Speed 4th rack travel in: 950

rom : 0.00...1.00Speed

STARTING FUEL DELIVERY

Speed

rpm : 100

Del.quantity cm3/: 90.0...110.0

1000 s: (86.0...114.0)

N25

Remarks:

: MAN-NR. 2-7966

APPLICATION

Generator set

Note remarks

Test sheet : RVI 9,8 k : 06.04.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 046 340 Combination no.

Injection pump

Pump designation : PES6P120A320RS525 : 0 412 026 058 EP type number

Governor

Governor design. : RQV300...1050PA955

: 0 421 813 856 Governer no.

Customer-spec. information Customer : RVI

Engine : MIDSO62045J

1st version kW : 160.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...14.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1050 1st speed

: 8.00...8.20 travel mm

rpm : 300 2nd speed

: 1.10...1.50 travel mm

rpm : 430 3rd speed

travel mm 3.40...4.00

rpm : 1400 4th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1075

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 135.0...137.0 Del.quantity

1000 : (132.0...140.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 298...306

Testing:

1st rack travel in: 8.20

rpm : 1120...1130 Speed

2nd rack travel in: 4.00

Speed rpm: 1175...1205 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 244...252

Testing:

Speed : 200 rpm Minimum rack trave: 7.80 rpm : 300

Rack travel in mm : 5.40...5.30

CONSTANT REGULATION

rpm : 310...430 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 126.0...132.0 1000 s: (123.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.20

rpm : 1120...1130 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 15.0...21.0
1000 s: (12.0...24.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks: